Defense Special Weapons Agency
Alexandria, VA 22310-3398

DNA-TR-95-14

Assessment for Single Integrated Operations Planning (ASIOP) Program

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April 1997

Technical

CONTRACT No. DNA 001-90-C-0005

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REPORT DOCUMENTATION PAGE

Form Approved
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Public reporting burden for this collection of information is estimated to average 1 hour per response including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	970401	Technical 891114 - 950213

4. TITLE AND SUBTITLE
Assessment for Single Integrated Operations Planning (ASIOP) Program

5. FUNDING NUMBERS
C - DNA 001-90-C-0005
PE - 62715H
PR - RO
TA - RB
WU - DH093490

6. AUTHOR(S)
Allen K. Rachel

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Science Applications Intl Corp
10260 Campus Point Drive
San Diego, CA 92121-1578

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, VA 22310-3398
OPSFC/Perrone

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
DNA-TR-95-14

11. SUPPLEMENTARY NOTES
This work was sponsored by the Defense Special Weapons Agency under RDT&E RMC Code B4662D RO RB 00154 NASF 2430A 25904D.

12a. DISTRIBUTION/AVAILABILITY STATEMENT
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12b. DISTRIBUTION CODE

13. ABSTRACT (*Maximum 200 words*)

The contract objective was to provide responsive, quick turn around analytical support in support of multiple customers that included SAC, STRATCOM, JCS, JOSDEPS, OSD, and USSPACECOM. Task areas included: Survivable adaptive planning, network analysis, updating NWE models in planning codes, offense-defense integration, impact of policy and arms control on strategic planning, earth penetrating weapons, MOE development and assessment, strategic basing, new SIOP planning hardware/software assessment, alternative employment, and quick reaction tasking. Force acquisition, Strategic Arms Reduction Talks (START), and Strategic Defense System (SDS) related issues prompted the need for the analytical support in the task areas described. Subsequent world events (proliferation of weapons of mass destruction (WMD)), prompted an increased need for analytical support during the last two years of this contract. Contract period of performance was from 14 November 1989 through 13 February 1995. In summary, the leveraging of on-going related work and the ability to commit the right mix of analytical resources became the signature characteristic of this contract. As DoD analytical needs shifted from traditional cold war issues to those associated with counter proliferation analysis, DSWA's analytical support to their customers was able to adapt analytical support to meet the dynamic needs of a multiple customer base.

14. SUBJECT TERMS
Strategic Analysis
Planning Employment

15. NUMBER OF PAGES
108

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	SAR

NSN 7540-280-5500

Standar d Form 298 ((rev. 2-89)
Precribed by ANSI Sta. 239-18
298-102

DTIC QUALITY INSPECTED 3

CLASSIFIED BY:

N/A since Unclassified.

DECLASSIFY ON:

N/A since Unclassified.

SUMMARY

This was a DNA funded multi-task contract in support of multiple customers that included SAC, STRATCOM, JCS, JOSDEPS, OSD, and USSPACECOM. The contract objective, tasks, and management are summarized on the right side of Figure S-1.

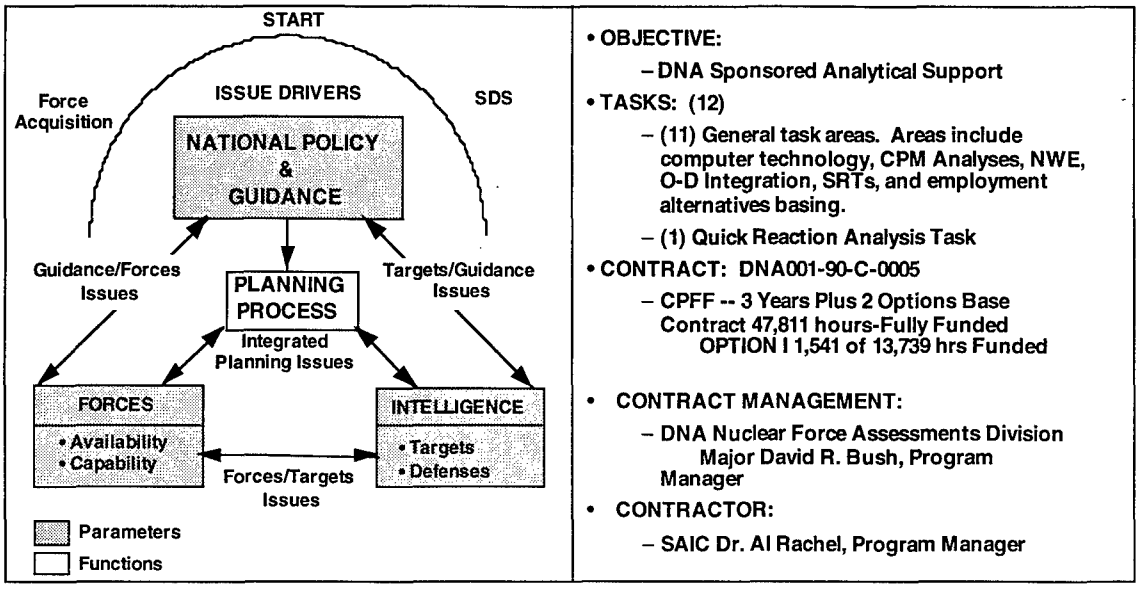

Figure S-1. Program overview.

The graphic on the left depicts the three major parameters, national guidance, intelligence derived threat, and force structure, that impact the planning process for any specific planning cycle. Force acquisition, Strategic Arms Reduction Talks (START), and Strategic Defense System (SDS) related issues prompted the need for analytical support of the type provided in this contract. Recent world events and considerations, driven primarily by proliferation of weapons of mass destruction (WMD), prompted an increased need for timely and responsive analytical support during the last two years of this contract. Contract period of performance was from 14 November 1989 through 13 February 1995. This includes the exercise of both option periods.

PREFACE

The scope and depth of analytical issues addressed by the statement of work (SOW) was very extensive. Table P-1 reflects specific areas of inquiry. During the period of performance there were 87 separate analytical subtasks worked.

Table P-1. ASIOP Statement of work.

•	TASK 1	NEW TECHNOLOGIES FOR ADAPTIVE AND SURVIVABLE SYSTEMS
•	TASK 2	NETWORK ANALYSIS OF SIOP PROCESS
•	TASK 3	NWE IMPLICATIONS
•	TASK 4	OFFENSE-DEFENSE INTEGRATION ANALYSIS
•	TASK 5	TREATIES AND POLICY IMPLICATIONS
•	TASK 6	MULTI-PURPOSE EPW EMPLOYMENT OPERATIONS
•	TASK 7	MOES' UTILITY IN PLANNING AND SIOP ASSESSMENT
•	TASK 8	ALTERNATE BASING MODES
•	TASK 9	NEW TECHNOLOGIES ON TRICOMs
•	TASK 10	ALTERNATE EMPLOYMENT OPTIONS
•	TASK 11	SRT/RECONNAISSANCE IN A NUCLEAR ENVIRONMENT
•	TASK 12	QUICK REACTION ANALYSIS

The customer, number of deliverables, and completion status for each of these subtasks is summarized in Table P-2. Details of task objective, technical approach, and deliverables are defined in Appendix A.

One of the most unique aspects of this contract was the number of customers supported. Tables P-3 and P-4 reflect the customers supported and the level of effort applied to each of the SOW tasks and subtasks. Table P-3 is an overview of this information. Table P-4 is a more detailed account of the individual customers supported, the subtasks involved and the level of effort applied to each subtask. Some subtasks were in support of dual customers and are appropriately indicated.

Table P-2. ASIOP task data.

	Task Area (SAIC Task Leader)	Customer/Office	#	Status
Task 1	New Technologies (Dr. Carl Rindfleisch)			
1.1	SAPE Test Criteria Assessment	JSTPS/JKCF	D1	SW / FEB90
1.2	SAPE Technical Support	JSTPS/JKCF	D3	SW / JUN92
Task 2	Network Analysis (Mr. Roger Craver)			
2.1	JSTPS Analytical Support	JSTPS/JKCF	D2	C / MAY91
2.2	Strategic Defense Network Analysis	JOSDEPS		SW / OCT90
2.3	Network Analysis for STRATCOM	STRATCOM/J-52	D7	C / MAR94
Task 3	NWE Implications (Mr. Joe Manship)			
3.1	PEM Upgrade for MEM	JSTPS/JLWT	D3	C / MAR90
3.2	Fireball Model Implications	JSTPS/JLWT	D1	C / MAY90
3.3	Fireball Model Update for MEM	JSTPS/JLWT	D2	C / OCT90
3.4	Multiburst Requirements for MEM	JSTPS/JLWT	D1	CNX / OCT90
3.5	Wind Effects on RV Fratricide	JSTPS/JKCS; SAC/XOBM	D3	C / JUN90
3.6-3.12	Schedule MEM NWE Upgrade	JSTPS/JLWT		C / MAR92
3.13	PDCALC Users' Group	STRATCOM/J-53	D2	SW / JUL94
3.14	NWE Upgrades for MEM	JSTPS/JLWT	D2	C / NOV92
3.15	Currency of MEM NWE Models	STRATCOM/J-52; JSTPS/JLWT	D4	C / SEP93
3.16	Advanced Conventional Penetrator	DNA/DFSP	D2	C / JUL94
3.17	Insure Currency of MEM NWE	STRATCOM/J-52	D4	C / AUG94
3.18	Establish Future HISEMM Requirements	STRATCOM/J-52		SW / JAN94
Task 4	Offense/Defense (Mr. Norm Fennelly)			
4.1	MMIII Review	SAC/XRF	D1	C / MAY90
4.2	NWE on MMIII	SAC/XRF	D1	C / JUN90
4.3	NWE on Peacekeeper	SAC/XRF	D1	SW / JUL90
4.4	Battlespace Management	SAC/XRF	D1	C / APR92
4.5	ODI White Paper	DNA		CNX / MAR91
4.6	ODIOWG Support	DNA/NACD	D2	SW / MAY92
4.7	Future C2 Capabilities	J-36/NOCCD-PB	D5	C / JUL94
Task 5	Treaties/Policy			
5.1	National Security & Mutual Strategic Defenses	OSD	D1	C / AUG90
5.2	Hosting NIS at SAC	SAC/XPXX	D2	C / FEB90
5.3	DNA Support to Joint Staff/J5	JCS/J5	D4	C / NOV90
5.4	DNA Support to Joint Staff/J8	JCS/J8	D4	CNX / MAY91
5.5	DNA Support to OSD/ISP/SFP	OSD/SFP	D4	C / AUG91
5.6	DNA Support to JCS/J5	JCS/J5	D1	SW / AUG94
5.7	Introduction to NWE and Employment Planning	JCS/J5	D4	SW / DEC91
5.8	Strategic Kinetic Weapon	OSD/SFP	D2	C / AUG91
5.9	SIOP Planning Support	OSD/SFP	D3	C/FEB92
Task 6	Earth Penetrating Weapons (Mr. Roger Craver)	OSD/SFP		
6.1	Feasibility of EPW Calculations	JSTPS/JKCS	D1	C / MAY91
6.2	EPW PSP/DGZ Methodology	JSTPS/JKCS	D5	SW / MAR92
6.3	EPW Comparative Analysis	JSTPS/JKCS	D2	CNX / MAR91
Task 7	MOEs (Mr. Roger Craver)			
7.1	MOE Tutorial	DNA/NASF	D2	C / NOV92
7.2	JCS J5/J8 Support	JCS/J8	D1	C / OCT90
7.3	Fire VN Analytical Support	JCS/J8		CNX / MAY91
7.4	VNTK Methodology	JSTPS/JKCS	D3	C / JUN92
7.5	Radiation Effects	STRATCOM/J-53	D3	SW / JUL94

D-Deliverables; C-Completed; SW-Stopped Work; CNX-Cancelled

Table P-2. ASIOP task data (Continued).

	Task Area (SAIC Task Leader)	Customer/Office	#	Status
Task 8	Alternative Basing (Dr. Bill Woolson)			
8.1	PKRG Basing Issues	Hq.SAC/XRQ		SW / JUN90
8.2	Advanced Missile & Basing Concepts	Hq.SAC/XRQ	D2	CNX / MAY90
8.3	SICBM Basing Without MMII	Hq.SAC/XRQ	D2	CNX / MAY90
8.4	Fallout Risks to HML Operations	Hq.SAC/XOKM	D2	C / OCT90
8.5	ICBMs - 21st Century	Hq.SAC/XRQ	D3	CNX / MAY90
Task 9	TRICOMs (Dr. Carl Rindfleisch)			
9.1	Algorithm Alternatives	JSTPS/JKCF		SW / JAN90
9.2	Enhancing the NDL	JSTPS/JLWD	D2	C / MAR90
9.3	Blue Book Optimizer Code	JSTPS/JKCF	D2	C / JAN91
9.4	Review of Combined Timing & Resolution Code	JSTPS/JPP	D2	C / MAY91
9.5	Enhancing NDL - SIOP Dev.Interfaces	JSTPS/JLWD	D2	SW / MAY91
9.6	Enhancing NDL - Impact & Imp.	JSTPS/JLWD	D2	CNX / MAY91
9.7	CT&R Follow On	JSTPS/JPPP		SW / AUG91
Task 10	Alternative Employment (Dr. Al Rachel)			
10.1	DNA Analytical Support to JOSDEPS	JOSDEPS; JCS/J8	D4	C / OCT90
10.2	Roadmap	JCS/J8		CNX / DEC90
10.3	JOSDEPS-JSTPS Tool Application & Roadmap	JOSDEPS; JCS/J8	D3	C / MAY91
10.4	Joint Strategic Defense Ops Planning System	JOSDEPS	D2	C / SEP91
10.5	SIOP -94 Replanning Study	DNA Rep. to NPWG	D3	SW / SEP92
10.6	Future U.S. Stategic Planning Requirements	DNA	D3	SW / MAR94
10.7	Joint Strategic Defense Planning Requirements	JOSDEPS	D2	SW / MAY93
10.8	Alternative Force Structure Assessments	JSTPS/JKAW; OSD/ISP/SFP	D2	SW / MAR92
10.9	Alternative Employment Options	STRATCOM-SAC-DNA/DIR	D4	C / AUG94
10.10	Large Area Target Analysis	ACC	D2	C / OCT93
10.11	Long-Range Strike Warfare	OSD Net Assessment	D4	C / APR94
10.12	OSD Support	OSD Net Assessment		CNX / SEP93
Task 11	SRT/RECON (Mr. Barney Clark)			
11.1	SIOP SRT Action Sequences	JSTPS/JKCC		SW / FEB90
11.2	SRT Operational Perspectives	SAC/INAT	D3	C / APR91
11.3	Logistics Infrastructure Analysis System (LIAS)	JSTPS/JLT	D2	SW / APR91
Task12	QRA (Dr. Al Rachel)			
12.1	J5/J8 Strategic Sufficiency	DNA	D3	C / MAY90
12.2	SIOP Prototype Study (TOR - First Outline)	JSTPS/JKCF	D2	C / JUL90
12.3	SAPE Program Mtg. Support	JSTPS/JKCF	D3	C / NOV90
12.4	ODI Issues in a GPALS Context	DNA	D2	C / MAR91
12.5	Republic Nuclear Powers	DNA		C / DEC91
12.6	STRATCOM Support	DNA		SW / JUL92
12.7	DNA Analytical Support	DNA/NASF	D5	C / MAY94
12.8	No First Use	DNA		C / DEC93
12.9	Strategic Futures 2	STRATCOM		C / MAY94
12.10	Conventional Strategic Weapons	DNA/NASF	D2	C / DEC93
12.11	Conventional/Nuclear Deterrence	DNA/NSCD	D2	C / MAY94
12.12	Strategic Futures 2 Phase II	STRATCOM		C / OCT94

D-Deliverables; C-Completed; SW-Stopped Work; CNX-Cancelled

Table P-3. Level of effort overview.

TASKS:	CUSTOMERS: JSTPS	JOSDEPS	STRATCOM	SAC	DNA	OSD	JCS	ACC	TASK DOLLARS SPENT:
Task 1 New Technologies	$214.7	—	—	—	—	—	—	—	$214.7
Task 2 Network Analysis	$109.0	$22.0	$93.1	—	—	—	—	—	$224.1
Task 3 NWE Implications	$866.3	—	$391.5	$22.5	$94.4	—	—	—	$1,374.7
Task 4 Offense/Defense	—	—	—	$226.7	$65.2	—	$162.8	—	$454.7
Task 5 Treaties/Policy	—	—	—	$3.5	—	$183.9	$411.9	—	$599.3
Task 6 Earth Penetrating Weapons	$187.9	—	—	—	—	—	—	—	$187.9
Task 7 MOEs	$28.2	—	$166.0	—	$16.1	—	$25.3	—	$235.6
Task 8 Alternative Basing	—	—	—	$39.6	—	—	—	—	$39.6
Task 9 TRICOMs	$90.4	—	—	—	—	—	—	—	$90.4
Task 10 Alternative Employment	$4.3	$213.5	$147.6	—	$184.1	$188.2	$59.6	$23.1	$820.4
Task 11 SRT/RECON	$13.9	—	—	$80.0	—	—	—	—	$93.9
Task 12 QRA	$24.3	—	$334.2	—	$180.7	—	—	—	$539.2
CUSTOMER DOLLARS SPENT: (dollars in thousands)	$1,539.0	$235.5	$1,132.4	$372.3	$540.5	$372.1	$659.6	$23.1	$4,874.5

Table P-4. Level of effort per customer and task.

			Task 1		Task 2			Task 3								
	Customer	POC	1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5*	3.6-3.12	3.13	3.14	3.15*
1	JSTPS	JKCF	$4.6	$210.1	$109.0											
		JLWT						$33.4	$15.0	$46.0	$0.0		$572.6		$136.1	$40.7
		JKCS										$22.5				
		JKAW														
		JKCC														
		JLT														
		JLWD														
		JPP														
2	JOSDEPS					$22.0										
3	STRATCOM															
		J-52					$93.1									$40.8
		J-53												$312.3		
		J-55														
	STRATCOM-SAC-DNA/DIR															
4	SAC	XOBM										$22.5				
		XPXX														
		XRFF														
		INAT														
	Hq. SAC	XRQ														
		XOKM														
5	DNA															
		NASF														
		NSCD														
		DFSP														
	DNA Rep to NPWG															
6	OSD															
		SFP														
		ISP/SFP														
	OSD Net Assessment															
7	JCS	J5														
		J8														
	J-36	NOCCD-PB														
8	ACC															
	TASK DOLLARS SPENT: (dollars in thousands)		$4.6	$210.1	$109.0	$22.0	$93.1	$33.4	$15.0	$46.0	$0.0	$45.0	$572.6	$312.3	$136.1	$81.5

* Total task dollars divided between two customers

Table P-4. Level of effort per customer and task (Continued).

			Task 3			Task 4							Task 5			
	Customer	POC	3.16	3.17	3.18	4.1	4.2	4.3	4.4	4.5	4.6	4.7	5.1	5.2	5.3	5.4
1	JSTPS	JKCF														
		JLWT														
		JKCS														
		JKAW														
		JKCC														
		JLT														
		JLWD														
		JPP														
2	JOSDEPS															
3	STRATCOM															
		J-52		$37.4	$1.0											
		J-53														
		J-55														
	STRATCOM-SAC-DNA/DIR															
4	SAC	XOBM														
		XPXX												$3.5		
		XRFF				$25.0	$48.5	$28.8	$124.4							
		INAT														
	Hq. SAC	XRQ														
		XOKM														
5	DNA									$0.0						
		NASF									$65.2					
		NSCD														
		DFSP														
	DNA Rep to NPWG		$94.4													
6	OSD												$38.9			
		SFP														
		ISP/SFP														
	OSD Net Assessment															
7	JCS	J5													$48.5	
		J8														$0.0
	J-36	NOCCD-PB										$162.8				
8	ACC															
	TASK DOLLARS SPENT: (dollars in thousands)		$94.4	$37.4	$1.0	$25.0	$48.5	$28.8	$124.4	$0.0	$65.2	$162.8	$38.9	$3.5	$48.5	$0.0

Table P-4. Level of effort per customer and task (Continued).

	Customer	POC	Task 5					Task 6			Task 7					
			5.5	5.6	5.7	5.8	5.9	6.1	6.2	6.3	7.1	7.2	7.3	7.4	7.5	8.1
1	JSTPS	JKCF														
		JLWT														
		JKCS						$80.1	$107.8	$0.0				$28.2		
		JKAW														
		JKCC														
		JLT														
		JLWD														
		JPP														
2	JOSDEPS															
3	STRATCOM															
		J-52														
		J-53													$166.0	
		J-55														
	STRATCOM-SAC-DNA/DIR															
4	SAC	XOBM														
		XPXX														
		XRFF														
		INAT														
	Hq. SAC	XRQ														$11.2
		XOKM														
5	DNA															
		NASF									$16.1					
		NSCD														
		DFSP														
	DNA Rep to NPWG															
6	OSD															
		SFP	$65.0			$30.0	$50.0									
		ISP/SFP														
	OSD Net Assessment															
7	JCS	J5		$343.4	$20.0											
		J8										$25.3	$0.0			
	J-36	NOCCD-PB														
8	ACC															
TASK DOLLARS SPENT: (dollars in thousands)			$65.0	$343.4	$20.0	$30.0	$50.0	$80.1	$107.8	$0.0	$16.1	$25.3	$0.0	$28.2	$166.0	$11.2

Table P-4. Level of effort per customer and task (Continued).

	Customer	POC	Task 8					Task 9							Task 10	
			8.2	8.3	8.4	8.5	8.6	9.1	9.2	9.3	9.4	9.5	9.6	9.7	10.1*	10.2
1	JSTPS	JKCF						$5.0		$30.0						
		JLWT														
		JKCS														
		JKAW														
		JKCC														
		JLT														
		JLWD							$40.0			$0.0	$0.0			
		JPP									$15.4			$0.0		
2	JOSDEPS														$25.0	
3	STRATCOM															
		J-52														
		J-53														
		J-55														
	STRATCOM-SAC-DNA/DIR															
4	SAC	XOBM														
		XPXX														
		XRFF														
		INAT														
	Hq. SAC	XRQ	$0.0	$0.0		$0.0										
		XOKM			$28.4											
5	DNA															
		NASF														
		NSCD														
		DFSP														
	DNA Rep to NPWG															
6	OSD															
		SFP														
		ISP/SFP														
	OSD Net Assessment															
7	JCS	J5														
		J8													$25.0	$0.0
	J-36	NOCCD-PB														
8	ACC															
	TASK DOLLARS SPENT: (dollars in thousands)		$0.0	$0.0	$28.4	$0.0	$0.0	$5.0	$40.0	$30.0	$15.4	$0.0	$0.0	$0.0	$50.0	$0.0

Subtask Cancelled

Table P-4. Level of effort per customer and task (Continued).

	Customer	POC	Task 10										Task 11		
			10.3*	10.4	10.5	10.6	10.7	10.8*	10.9	10.10	10.11	10.12	11.1	11.2	11.3
1	JSTPS	JKCF													
		JLWT													
		JKCS													
		JKAW						$4.3							
		JKCC											$10.0		
		JLT													$3.9
		JLWD													
		JPP													
2	JOSDEPS		$34.6	$25.2			$128.7								
3	STRATCOM														
		J-52													
		J-53													
		J-55													
	STRATCOM-SAC-DNA/DIR								$147.6						
4	SAC	XOBM													
		XPXX													
		XRFF													
		INAT												$80.0	
	Hq. SAC	XRQ													
		XOKM													
5	DNA					$151.5									
		NASF													
		NSCD													
		DFSP													
	DNA Rep to NPWG				$32.6										
6	OSD														
		SFP													
		ISP/SFP						$4.3							
	OSD Net Assessment										$182.6	$1.3			
7	JCS	J5													
		J8	$34.6												
	J-36	NOCCD-PB													
8	ACC									$23.1					
	TASK DOLLARS SPENT: (dollars in thousands)		$69.2	$25.2	$32.6	$151.5	$128.7	$8.6	$147.6	$23.1	$182.6	$1.3	$10.0	$80.0	$3.9

* Total task dollars divided between two customers

Table P-4. Level of effort per customer and task (Continued).

	Customer	POC	Task 12 12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	12.10	12.11	12.12	TOTAL DOLLARS SPENT
1	JSTPS	JKCF		$11.8	$12.5										$383.0
		JLWT													$843.8 *
		JKCS													$238.6 *
		JKAW													$4.3 *
		JKCC													$10.0
		JLT													$3.9
		JLWD													$40.0
		JPP													$15.4
2	JOSDEPS														$235.5 *
3	STRATCOM										$57.3			$276.9	$334.2
		J-52													$172.3
		J-53													$478.3
		J-55													$0.0
	STRATCOM-SAC-DNA/DIR														$147.6
4	SAC	XOBM													$22.5
		XPXX													$3.5
		XRFF													$226.7
		INAT													$80.0
	Hq. SAC	XRQ													$11.2
		XOKM													$28.4
5	DNA		$24.1			$8.1	$12.4	$2.7		$13.4					$212.2
		NASF							$74.6			$23.1			$179.0
		NSCD											$22.3		$22.3
		DFSP													$0.0
	DNA Rep to NPWG														$127.0
6	OSD														$38.9
		SFP													$145.0
		ISP/SFP													$4.3
	OSD Net Assessment														$183.9
7	JCS	J5													$411.9
		J8													$84.9
	J-36	NOCCD-PB													$162.8
8	ACC														$23.1
	TASK DOLLARS SPENT: (dollars in thousands)		$24.1	$11.8	$12.5	$8.1	$12.4	$2.7	$74.6	$13.4	$57.3	$23.1	$22.3	$276.9	$4,874.5

* Total task dollars divided between two customers

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SECTION 1
PROGRAM PLANNING AND CONTROL

Subtask planning and control was the most challenging aspect in the administration of this contract. Careful project planning by both DNA and the customer ensured the best use of analytical resources. The process started with customer requirements and ended with the presentation of results in the form of briefings and topical reports. DNA played the key role in the staffing of the requirements to ensure that responsive subtask plans were developed. Key technical points of contact and the technical staff members from the SAIC team jointly developed a draft plan that included the objective, technical approach, and deliverables. This process ensured that analytical support needs were reflected in the plan. After requirements were staffed, DNA determined the cost related aspects in terms of man-hours and dollars. The investment of time and resources in the planning phase produced analytical results very responsive to the customer needs. This process also insured that the "right" analytical questions were asked and that both the analyst and the customer had confidence in the assumptions, models, and methodology associated with task performance. Figure 1-1 depicts the plan to completion flow followed for each subtask.

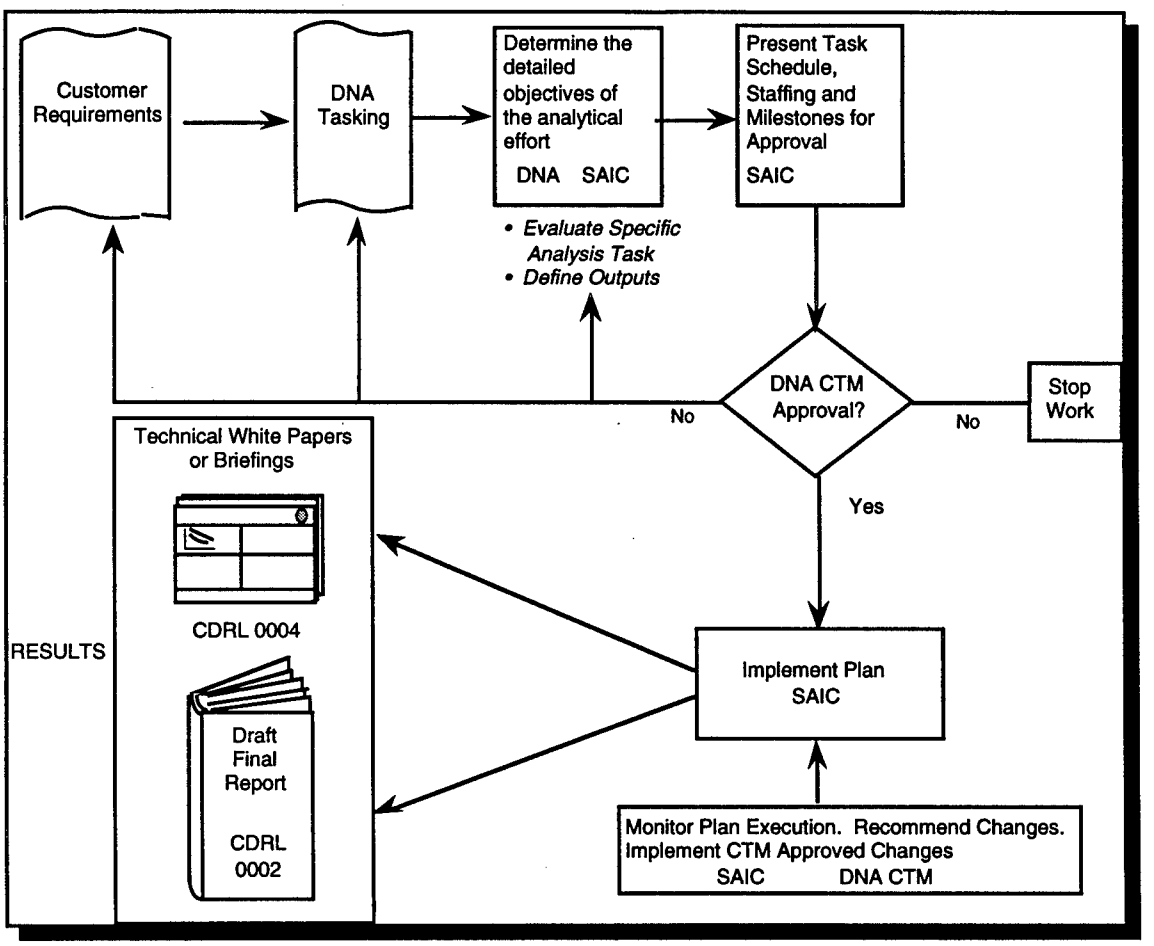


Figure 1-1. Program planning and control flow.

The contractor team provided technical analytical support from a variety of key locations. This proved to be very responsive to the "local support" aspect of many of the customers supported. During the five year period of this contract, very efficient network communications were established among the various technical support staff, customers supported, and the DNA contract technical monitor (CTM). At the conclusion of this contract, DNA transferred the in-process ASIOP subtask to the subsequent Strategic Force Planning Support contract (SFPS). Thus DNA was able to realize efficient travel savings without loss of customer responsiveness and without any contract start up delays or investment costs.

SECTION 2
PROGRAM HIGHLIGHTS

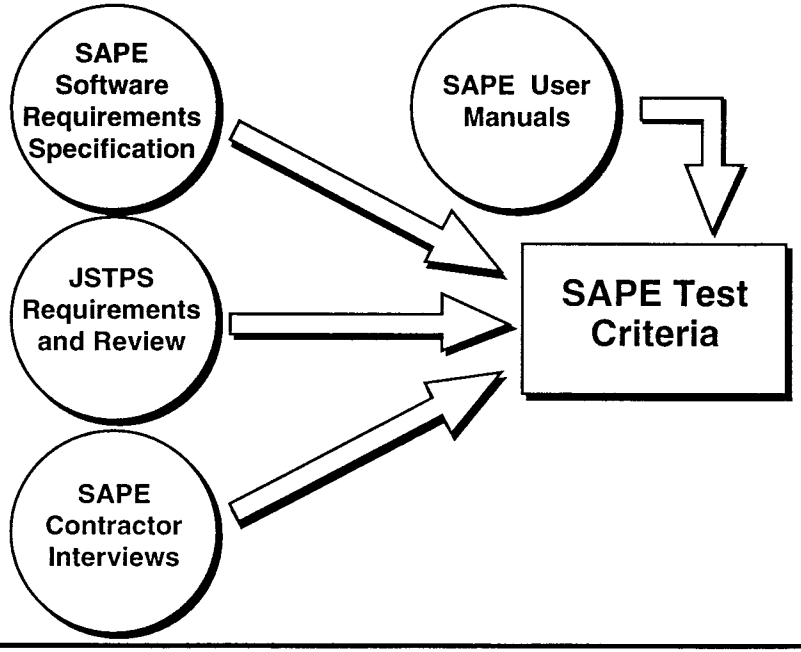
Responsiveness, leverage of on-going work, and the ability to draw on a wide range of analytical resources represent the ASIOP program highlights. Each of the subtasks were important in terms of responsiveness to a short term customer need. This quick response time was very much appreciated by customers and action officers. Leveraging of on-going work was reflected in the ability to incorporate related work of several on-going subtasks in a focused, quality response, provided at significantly less cost than would have been required in an "independent" effort. The ability to draw upon this wide range of resources was the key to quick turnaround on critical analytical tasks. Matching the right people to critical analytical tasks, without any "paperwork" delay, and the use of analytical staff from 29 different SAIC divisions reflects unprecedented flexibility in program planning and control. In summary, the leveraging of on-going related work and the ability to commit the right mix of analytical resources became the signature characteristic of this contract. As Department of Defense analytical needs shifted from traditional cold war issues to those associated with counter proliferation analysis, DNA's analytical support to their customers was able to adapt to meet the dynamic needs of a multiple customer base.

SECTION 3
PROGRAM TRANSITION AND COMPLETION

By providing time to plan and transfer on-going ASIOP tasks to the SFPS contract, DNA was able to provide uninterrupted support to their customers. Highly responsive support was possible to the end and transition costs were insignificant.

APPENDIX A
SUBTASK WORK PLANS

Chart A-1. SAPE test criteria assessment.



Objective

Determine and validate SAPE testing criteria.

Customer

Capt. Paul Hedin, JKCF (402)294-7868

SAIC Principal Investigator

Dr. Carl Rindfleisch, Jr. (619) 546-6390

Approach

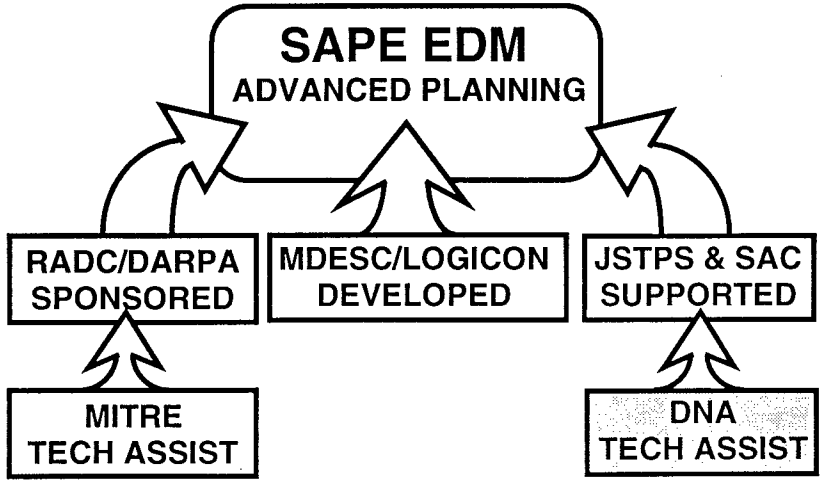
- Review SAPE software requirement specification
- Discuss/review objectives with JSTPS
- Develop SAPE test objectives
- Validate SAPE test objectives with JSTPS
- Review SAPE user manuals and documentation

Deliverables

- Report and briefing on validated SAPE testing criteria

As of 6/4/90

Chart A-2. SAPE technical assistance to JSTPS.



Approach

- Develop scenarios as JSTPS inputs to RADC for government test and evaluation.
- Assist JSTPS with evaluation inputs for government T&E and Offutt Secure Node Test
- Review MITRE-developed MOE
- Attend Program Reviews, T&E Working Groups, Inter-connectivity working groups, "Knowledge Acquisition" sessions.

Objective

PROVIDE TECHNICAL ASSISTANCE TO JSTPS IN SUPPORTING ROLE OF THE SAPE EXPLORATORY DEVELOPMENT MODEL (EDM)

Customer:	Captain Paul Hedin, JSTPS/JKCF (402) 294-2495
SAIC Principal Investigator:	Mr. Bob Wasilewski (402) 291-2233

Deliverables

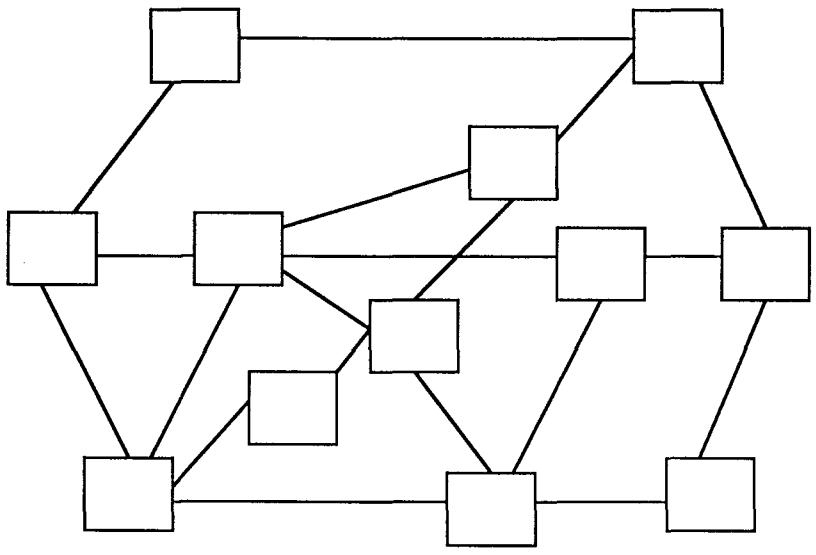
- Scenarios
- Evaluation inputs, MOE Reviews
- Meeting support

Benefits

Enhanced JSTPS participation in demonstration of applications of advanced technology to war planning.

Version 1 As of 15 JAN 91

Chart A-3. JSTPS analytical support.



Approach

- Select software for tutorial
- Collect and organize structural changes
- Make model adjustments
- Develop and document the tutorial
- Consider development of a "help facility"

Objective

To provide support to the JSTPS in adjusting and refining the CPM model of the SIOP development process, to include updating recent structural changes and developing a "point and click" tutorial.

Customer:	Capt. Anne Fletcher, JKCF (402) 294-7868
SAIC Principal Investigator:	Mr. Roger Craver (402) 291-2233

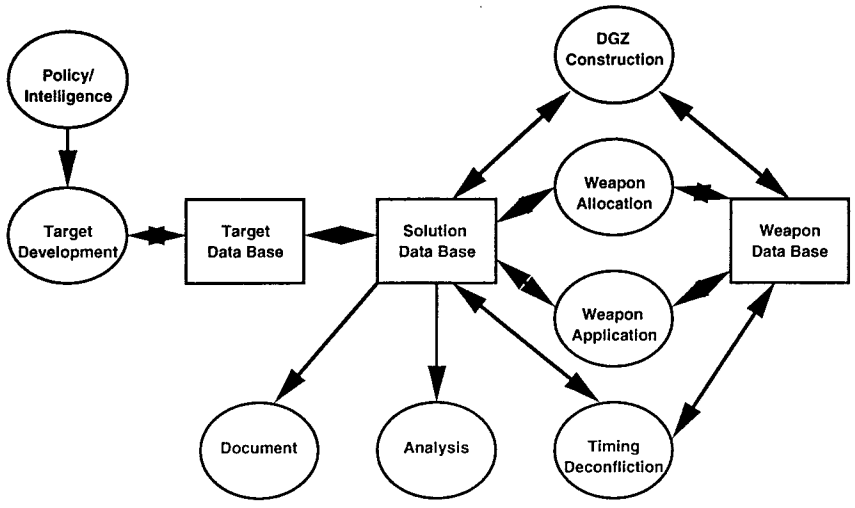
Deliverables

- Updated versions of SIOP development networks
- Documented tutorial and help facility

Benefits

- More rapid and thorough orientation of new personnel
- Improved ability to explain the SIOP development process to others having the need to know
- Availability of a powerful analytical tool

Chart A-4. SIOP prototype study.



Approach

- Determination of requirements
- Coordination with JSTPS/SNL
- Development of proposed solution
- Execution of plan

Objective

To provide supplemental support to JSTPS and/or SNL, primarily in the area of software conversions and the integration of proposed approaches with existing ones.

Customer:	Capt. Anne Fletcher, JKCF (402) 294-7868
SAIC Principal Investigator:	Mr. Roger Craver (402) 291-2233

Deliverables

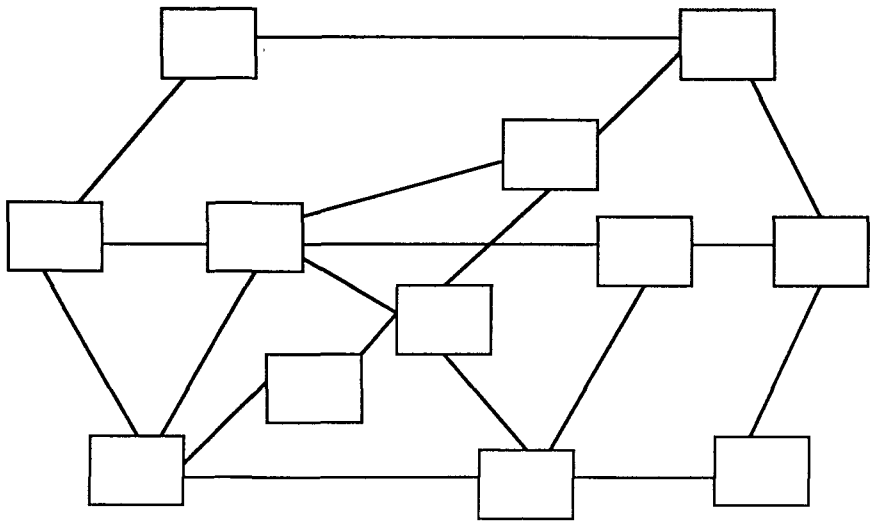
TBD

Benefits

- Earlier completion of project
- Continuity with existing procedures

Version 10.2 As of 12/6/90

Chart A-5. Network analysis for STRATCOM.



Approach

- Analysis of the planning process data to be modeled
- Development of drafts of the networks of each of the major functional areas
- Informal review of the draft versions by working elements of STRATCOM
- Refinement of the networks
- Review of the final networks by STRATCOM
- Installation of a projection capability
- Development of adaptive planning process network(s)
- Familiarization of J-523 personnel with the CPM process
- Development of SIOP maintenance networks
- Development of networks for strategic applications of conventional forces

Objective

To provide technical analytical support to STRATCOM J-523 in their development, testing and management of the new planning production system using a critical path version of network analysis.

Customer:	LTC Mike Elliot, J-52 (402) 294-7031
SAIC Principal Investigator:	Mr. Roger H. Craver (402) 291-2233

Deliverables

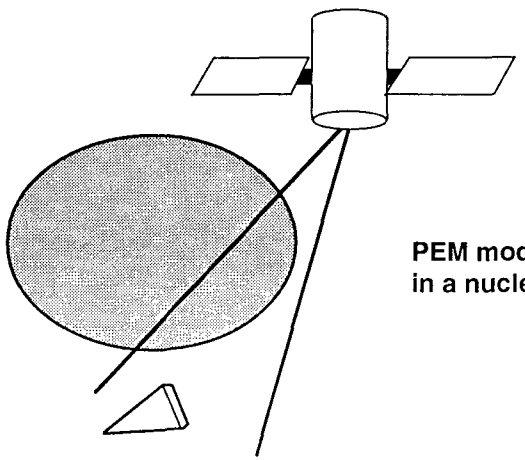
- CPM networks of all the key functional steps in the planning process used for preplanned strikes
- Multiple levels of detail for more complex processes
- CPM networks of the adaptive planning process
- CPM networks of the SIOP maintenance process
- CPM networks of the application of conventional forces in strategic targeting
- Analytic and management tools for the production process
- Recommendations for alternative software improvements

Benefits

- Graphic depiction of planning processes that permit recognition and understanding of complex interrelationships
- Rapid analytics for planning processes
- High level of insight into planning/production dynamics
- Improved ease of presentation and management of the production process
- Baseline input on the current SIOP development process for the Strategic Planning Study Group (SPSG)

8/10/92

Chart A-6. PEM upgrade for MEM.



PEM models sensor degradation in a nuclear environment

MEM ≡ Multiple Engagement Model
PEM ≡ Propagation Engagement Model

Objective

Evaluate PEM and incorporate current version (3.2) in MEM.

Customer

Lt. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997

SAIC Principal Investigator

Mr. Joe Manship (402) 291-2233

Approach

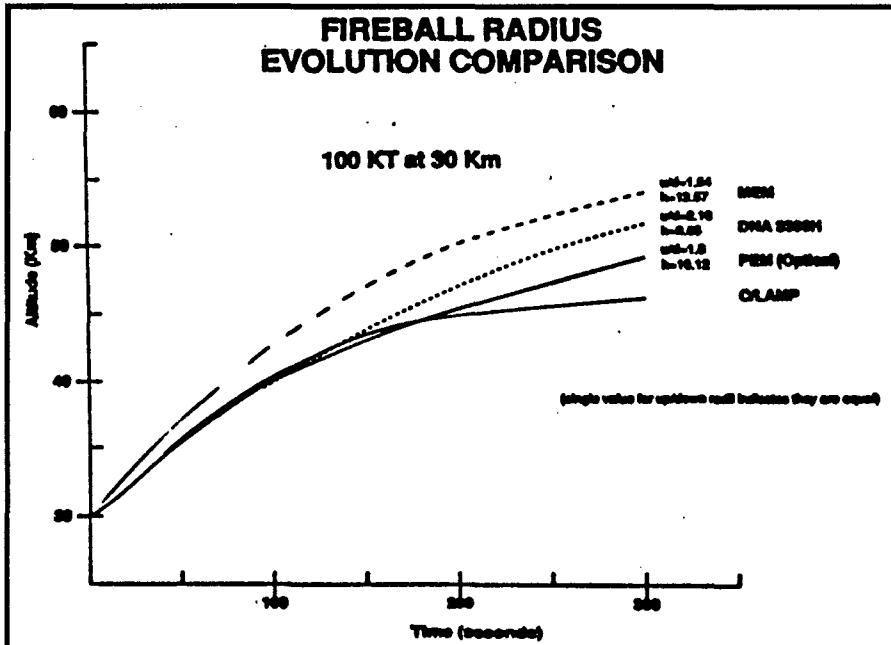
- Extract required PEM modules
- Insert modules into MEM
- Compare results of MEM and PEM standalone test runs
- Document and present results
- Install at JSTPS and SAC

Deliverables

- Report on PEM evaluation entitled "Subtask 3.1: Multiple Engagement Model (MEM) Propagation Engagement Module (PEM) Upgrade", SAIC-ASIOP/Subtask 3.1, 4 April 1990 (CDRL 0004).
- Integrated code (PEM in MEM). Delivered to JSTPS and SAC and is scheduled for installation on 15 July 1990 with MEM version 15.
- Subtask completed 4/13/90.

As of 5/2590

Chart A-7. Fireball model implications.



Objective

Compare MEM's current fireball model to C/LAMP and determine feasibility

Customer

Lt. Kevin Zumbar USN, JSTPS/JLWT (402)2 94-3997

SAIC Principal Investigator

Mr. Joe Manship (402) 291-2233

Approach

- Demonstrate sensitivity effects
- Review sensitivity results
- Identify appropriate Community Standard Codes (C/LAMP, etc.)
- Make comparison runs
- Evaluate effects on MEM results
- Create and present briefing

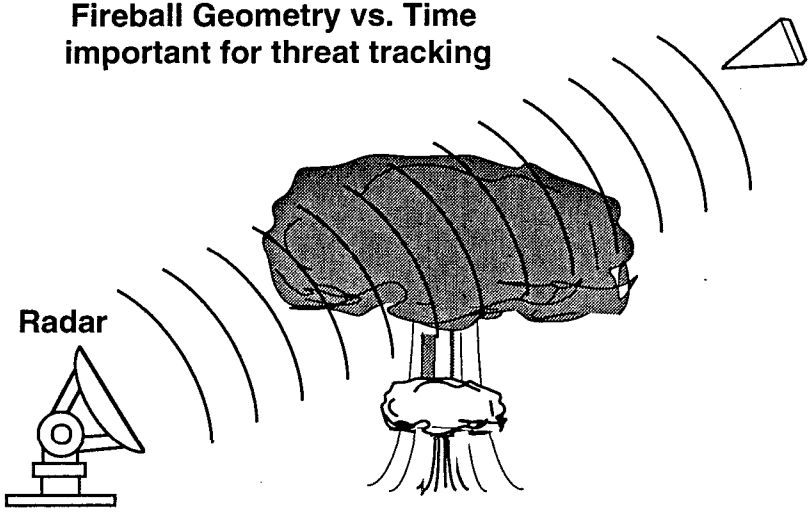
Deliverables

- White paper/report on MEM Fireball Comparison (CDRL 0004). Draft document entitled, "Subtask 3.2: Multiple Engagement Model (MEM) Fireball Validation" under internal review.

As of 4/19/90

Chart A-8. Fireball model update.

Fireball Geometry vs. Time important for threat tracking



MEM ≡ Multiple Engagement Model

Objective

Replace current MEM fireball model with one derived from C/LAMP (or other DNA approved standard).

Customer

Lt. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997

SAIC Principal Investigator

Mr. Joe Manship (402) 291-2233

Approach

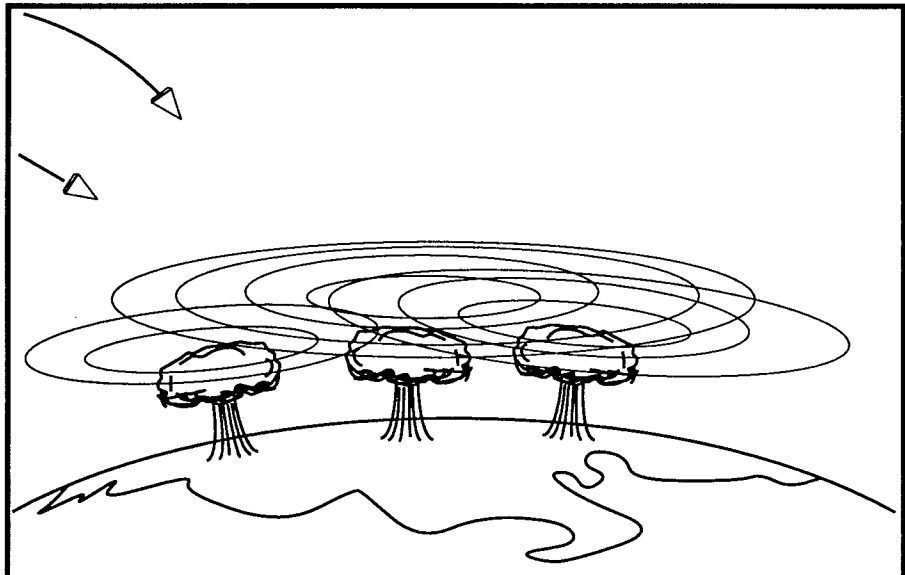
- Extract appropriate coding from DNA community standard
- Make comparison runs
- Present results of comparison runs
- Implement new model in MEM
- Install at JSTPS and SAC

Deliverables

- Updated MEM code installed at JSTPS and SAC
- Informal subtask report

Version 10.0 As of 5/25/90

Chart A-9. Multiburst requirements for MEM.



MEM ≡ Multiple Engagement Model

Objective

Evaluate the need for inclusion of Multiburst environments and effects in MEM

Customer

Lt. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997

SAIC Principal Investigator

Mr. Joe Manship (402) 291-2233

Approach

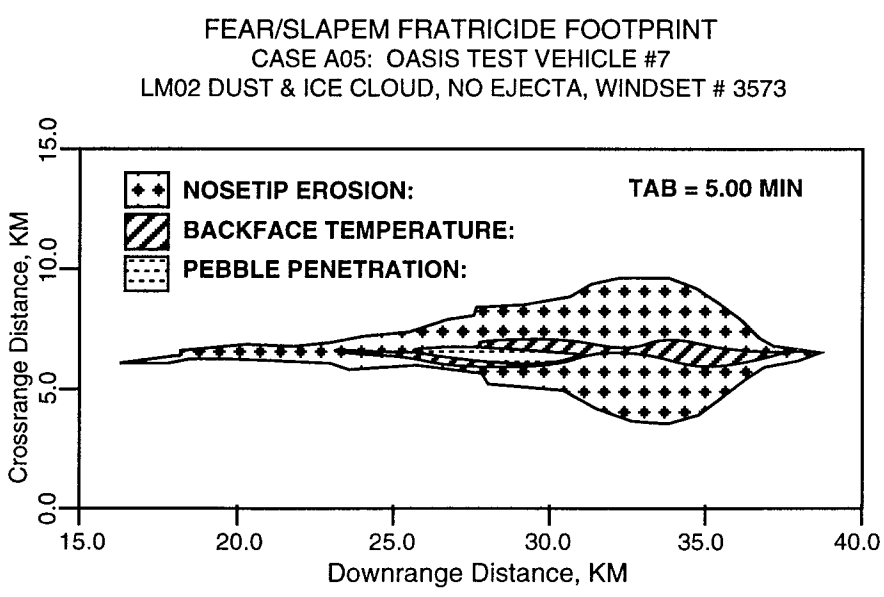
- Obtain geometries for bursts from typical JSTPS and SAC runs
- Run C/LAMP and/or LAMB using geometries
- Assess how and when multiburst phenomenology invoked
- Assess impact on MEM results
- Present results

Deliverables

- Report (in briefing format) on the effect of including Multiburst environments and effects in MEM

As of 6/4/90

Chart A-10. Wind effects on RV fratricide.



Objective

Assess operational impact of wind effects on RV fratricide.

Customer

Lt. Col. Jack Strickland USAF, JSTPS/JKCS (402) 294-4960
Capt. J.O. Miller USAF, SAC/XOBM

SAIC Principal Investigator

Dr. James Stoddard (619) 546-6294

Approach

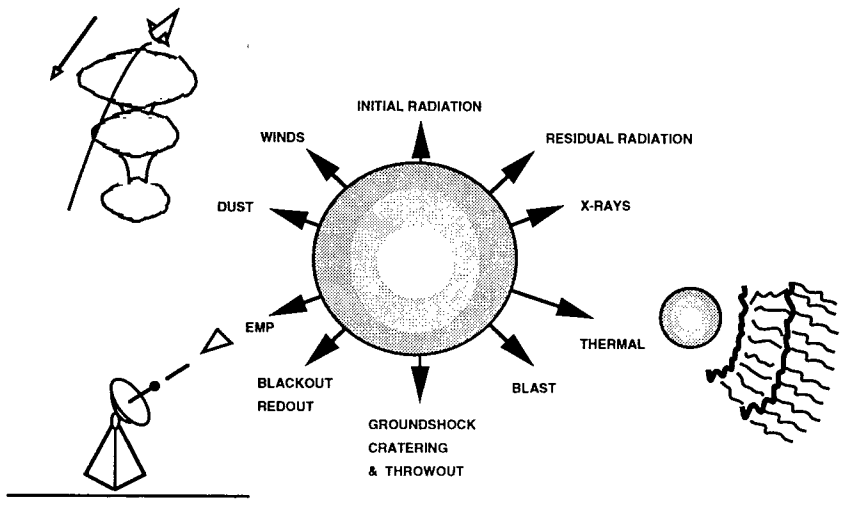
- Review SAC's current version of OASIS
- Design new module for wind environments with OASIS
- Review completed module design
- Generate code for wind module
- Perform offline tests and review results
- Derive detailed validation plan and review
- Install module at SAC
- Perform validation and document

Deliverables

- Installed wind effects module for OASIS (Delivered and installed on 2 April 1990).
- Validation report. Draft report under development (provided to DNA in April Progress Report).
- Subtask complete.

Version 10.0 As of 6/18/90

Chart A-11. NWE upgrades for MEM.



Objective

To insure that MEM results are accurate and credible with respect to NWE.

Customer:	LT. Dave States USN, USSTRATCOM/J-552 (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (619) 458-2769

Approach

- Compare/extract improvements from current NWE community codes or data (NORSE, C/LAMP, PEM, etc.)
  - No new first principle physics
  - Extract only as appropriate
  - Run times
  - Adequate accuracy
  - Applicability to MEM analyses
  - Suitable for operational environment
- Produce a report documenting validation and new models

Deliverables

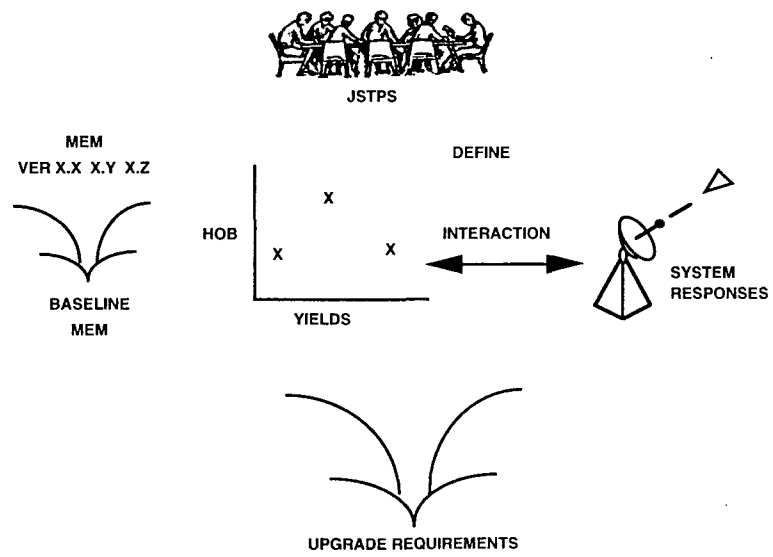
- Updated MEM Code installed at USSTRATCOM
- Documentation

Benefits

- Updated MEM Code with DNA approved NWE models
- Documentation suitable for USSTRATCOM MEM users

Version As of 12/13/90

Chart A-12. MEM NWE upgrade.
(Establish baseline code and user requirements)



Approach

- Establish Baseline MEM Code
- Build Baseline Data Bases
- User Establish Regions of Interest (Yield, HOB, Environment)

Objective

- To insure upgraded MEM code meets user's requirements.

Customer:	LT. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

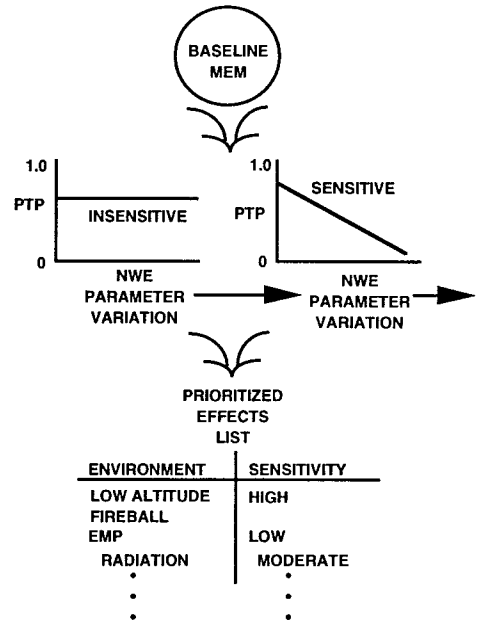
- Decision on Baseline Version of MEM
- Data Base to Support Upgrade
- Identified Regions of Interest

Benefits

- Sets Scope and Goals of Upgrade Program to Insure Success

Version 1.0 As of 10/26/90

Chart A-12. MEM NWE upgrade (Continued). (Prioritize NWE models)



Approach

- Prioritize NWE Models Based On
  - User Experience
  - Knowledge Of MEM Systems Models
  - Effect On MEM Outputs

Objective

- Insure That No Important Effect Is Left Out
- The Highest Priority NWE Models Are Addressed Early

Customer:	LT. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

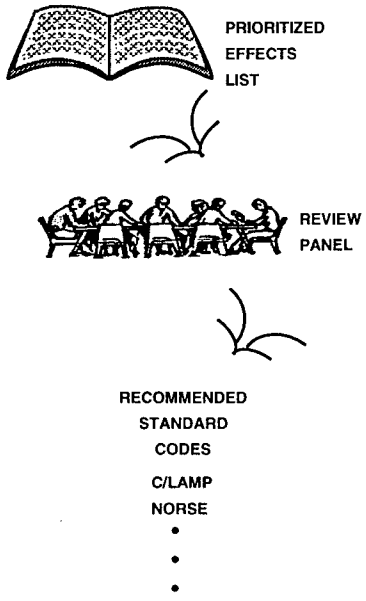
- Prioritized NWE List

Benefits

- Provides A Road Map For Upgrade Effort

Version 1.0 As of 10/26/90

Chart A-12. MEM NWE upgrade (Continued). (Identify replacement NWE models)



Approach

- Establish MEM NWE Upgrade Panel Of NWE Experts (DNA, AWE, SAIC) To Provide Recommendations

Objective

- To Use DNA Approved Models Where Suitable In Terms Of
  - Accuracy
  - Size
  - Run Time

Customer:	LT. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

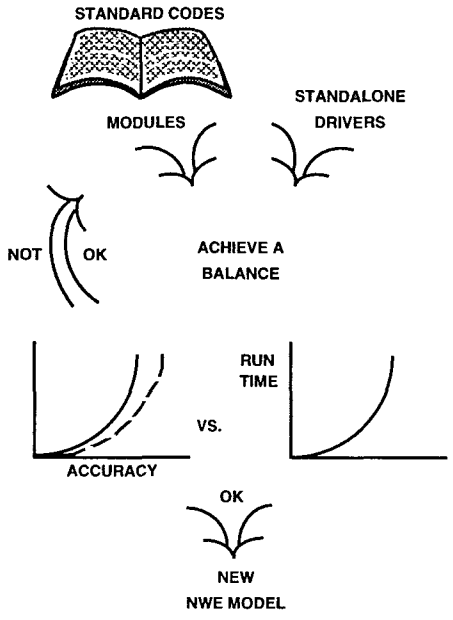
- Recommended Community Standard Codes For Incorporation Into MEM

Benefits

- Will Insure MEM Code Credibility

Version 1.0 As of 10/26/90

Chart A-12. MEM NWE upgrade (Continued). (Upgrade MEM NWE models as appropriate)



Approach

- Incorporate Community Standard NWE Codes In MEM As Appropriate

Objective

- Upgrade NWE Models In MEM Achieving A Balance Between Accuracy and Run Time

Customer:	LT. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

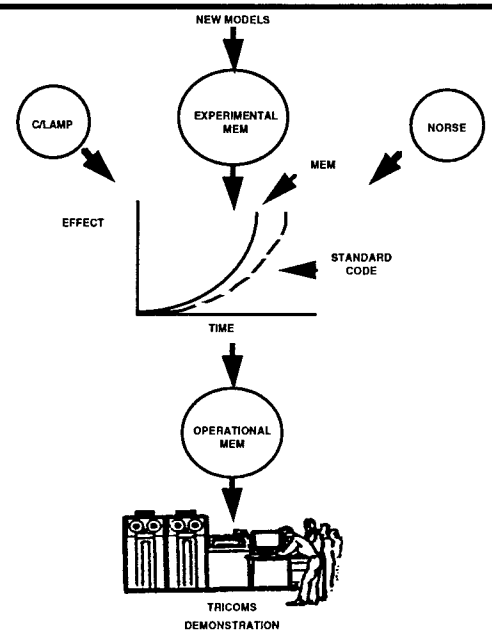
- Upgraded NWE Models

Benefits

- Will Enhance Code Credibility While Maintaining Usability

Version 1.0 As of 10/26/90

Chart A-12. MEM NWE upgrade (Continued). (Validation of upgraded models)



Approach

- Develop Test Plan
- Develop Software To Allow User To "See" NWE Models Operating
- Conduct Performance Evaluation

Objective

- To Demonstrate Accuracy Of New MEM Code To User

Customer:	LT. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

- Performance Evaluation Plan For Testing
- "Formalize" Software Debug Code

Benefits

- Will Establish Basis For Code Credibility

Version 1.0 As of 10/26/90

Chart A-12. MEM NWE upgrade (Continued). (Documentation)

Objective

- Provide A Complete Historical Record Of The Efforts And Findings From Task 3.6 Through 3.10

Customer:	LT. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

- Complete Documentation On Each NWE Model To Include:
  - Comparison Tables
  - Assumptions/Limitations
  - Model Description

Benefits

- Provides Knowledge And Understanding Of The Code

Approach

- Document Each Upgrade NWE Model Using
  - Graphical Aids
  - Reference Material
- NWE Model Upgrade Not Complete Until Documented

Version 1.0 As of10/26/90

Chart A-12. MEM NWE upgrade (Continued). (Maintain currency)

REVIEW PANEL

RECOMMENDATIONS

Approach

- Attend Community Standard Code User Meetings
- Implement Upgrades As Appropriate To MEM Uses

Objective

- Maintain Currency Of The NWE Models In MEM And Understanding Of Their Limitations

Customer:	LT. Kevin Zumbar USN, JSTPS/JLWT (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

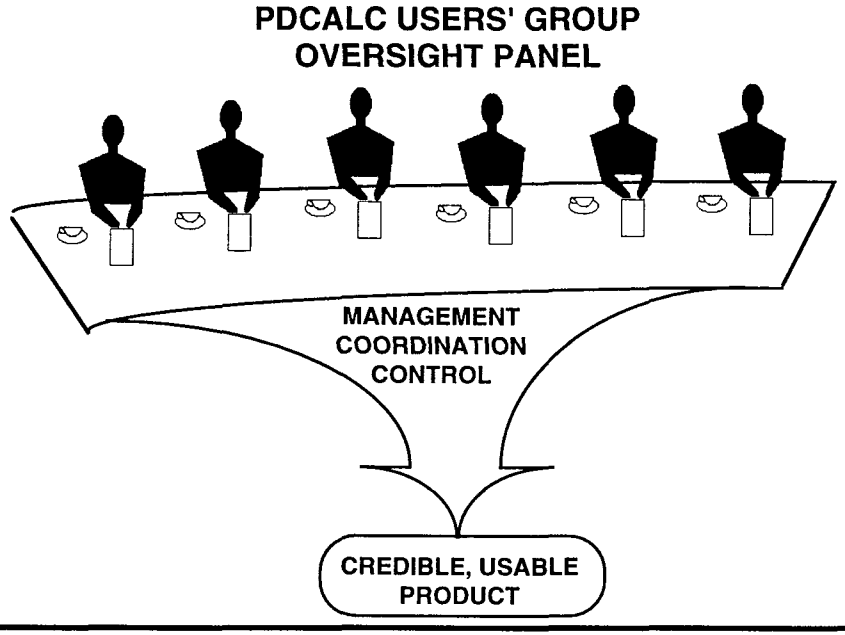
- Upgraded NWE Models

Benefits

- Will Maintain Credibility Of MEM Code

Version 1.0 As of 10/26/90

Chart A-13. PDCALC users' group.



Approach

- Set goals and objectives
- Establish modus operandi
- Identify the "official " version of the code
- Obtain a licensing agreement
- Monitor and assist in code evolution
- Manage and control change distributions
- Keep the membership informed and current

Objective

To establish a users' group for the management, control and coordination of the PDCALC code for all legitimate users to ensure that the code is credible and usable.

Customer:	LTC Tom Hopkins, JKCS (402) 294-4960
SAIC Principal Investigator:	Mr. Roger H. Craver (402) 291-2233

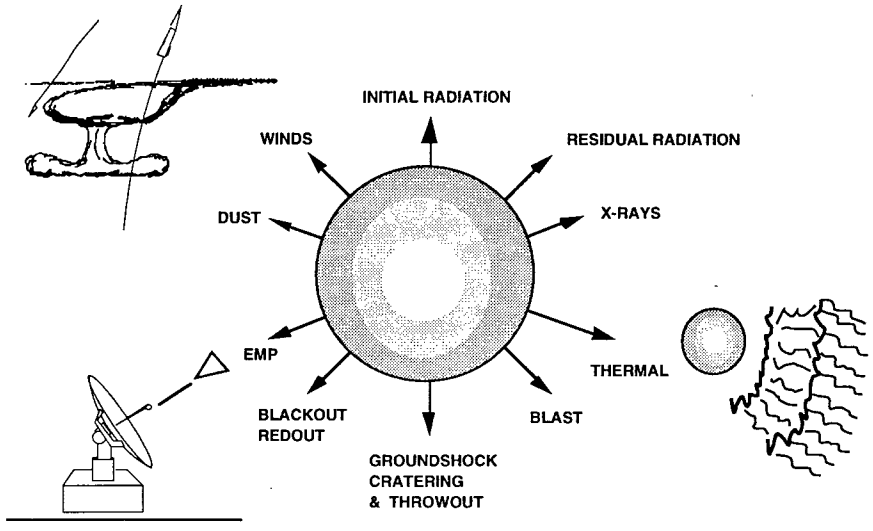
Deliverables

- Terms of Reference
- Licensing agreement
- Assistance in code modifications
- Distribution of changes
- Administrative and security management

Benefits

- Avoidance of proliferation of unofficial versions of the code
- Improved ability to coordinate and distribute code changes
- Limitation of time spent in tracking unauthorized changes
- Orderly access to recommendations for modifications

Chart A-14. NWE upgrades for MEM.



Approach

Integrate NWE models into MEM as DNA updates are released and approved by DNA-UK MEM Oversight Panel.

- Maintain currency
  - Upgrade new NWE models to latest versions
  - Attend user meetings
  - Additional NORSE validation
- Monitor/Provide inputs/Install new models for
  - Clutter
  - Dust
  - Fission Product Gamma
  - EMP

Objective

To insure that MEM results are accurate and credible with respect to NWE.

Customer:	LT. Dave States USN, USSTRATCOM/J-552 (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (402) 291-2233

Deliverables

- Updated MEM Code installed at JSTPS
- Documentation

Benefits

- Updated MEM Code with DNA approved NWE models
- Documentation suitable for JSTPS MEM users

Version 1.0 As of 2/25/92

Chart A-15. MEM NWE schedule.

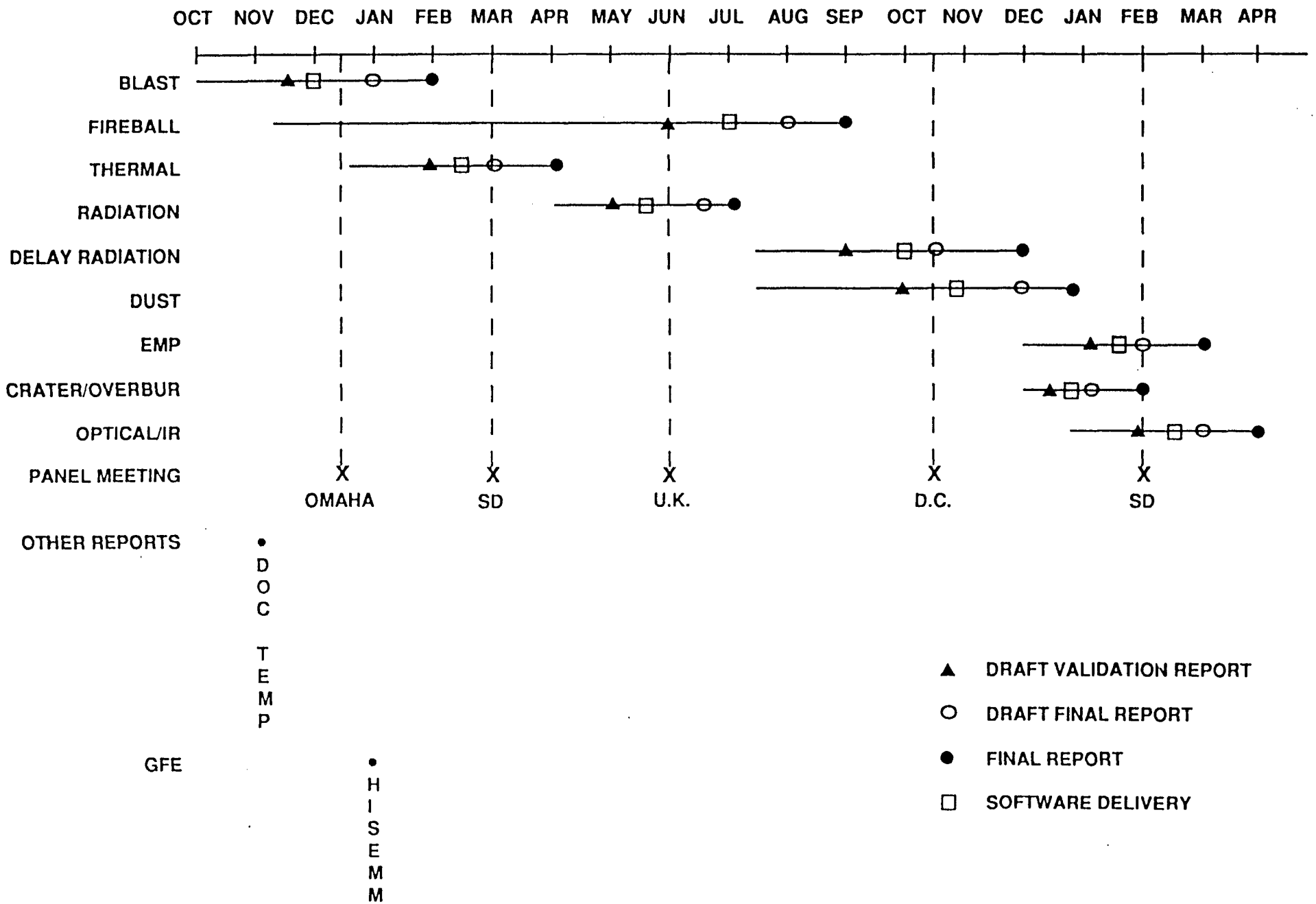


Chart A-15. MEM NWE schedule (Continued).

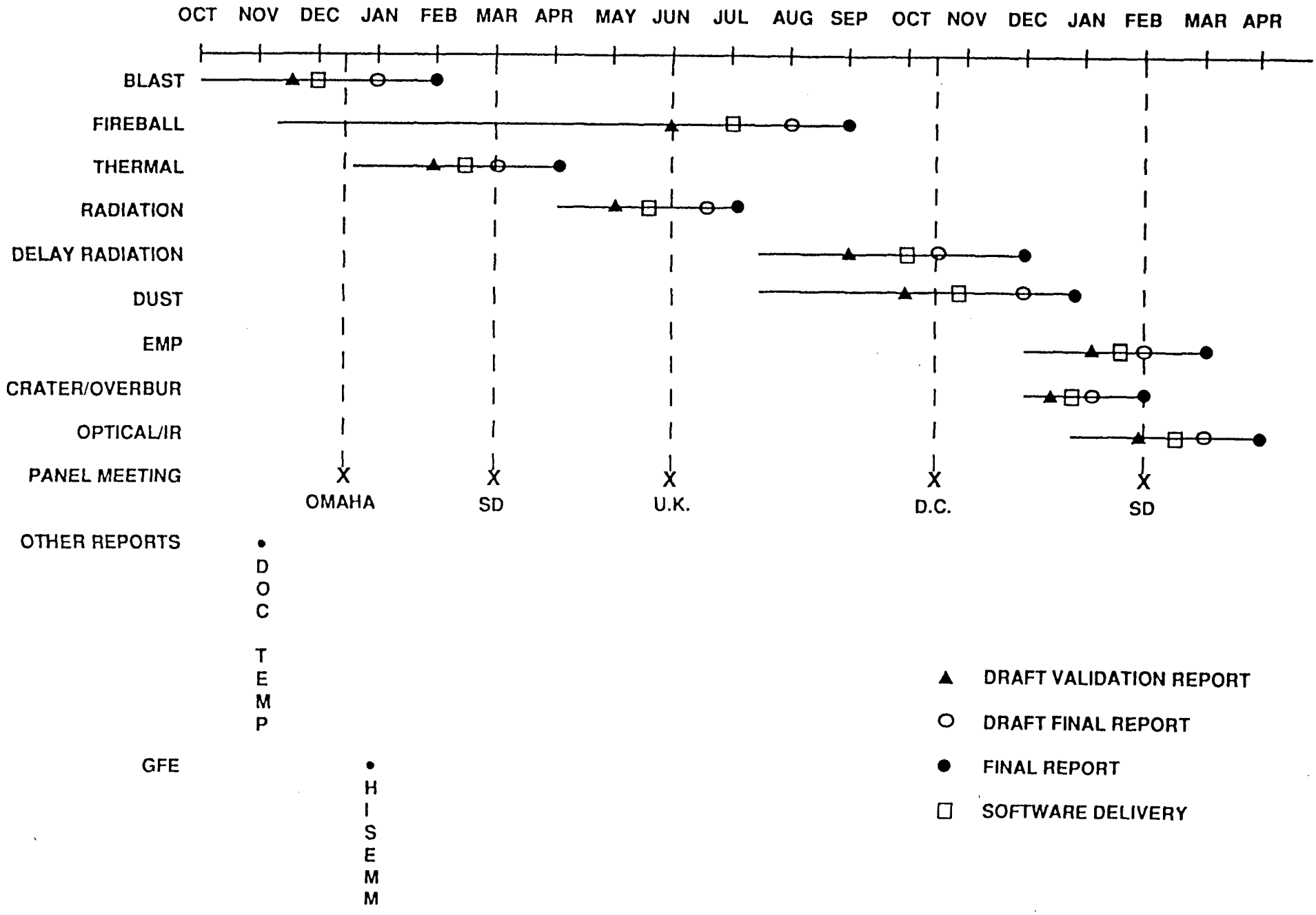
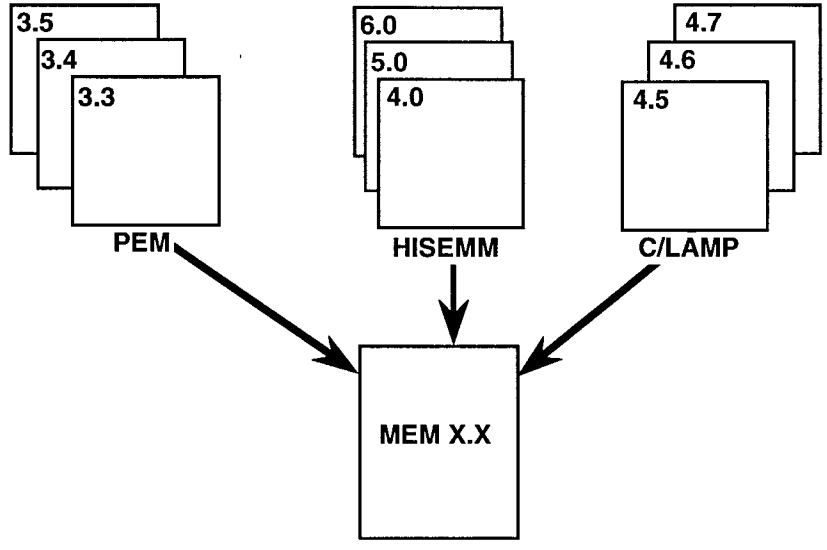


Chart A-16. Maintain currency of MEM NWE models.



Approach

- Attend and actively participate in all PEM, C/LAMP and HISEMM user meetings and prepare activity reports for MEM users.
- Organize/host 2 MEM NWE Upgrade Oversight Panel Meetings.
- Incorporate new releases of PEM, C/LAMP and HISEMM into MEM as they become available:
  (1) install released code on Bellevue computer;
  (2) run installation tests to validate correct operation of code
  (3) incorporate code or subset of code in current operational version of MEM
  (4) perform test runs to validate correct installation
  (5) deliver/install/test upgraded MEM code on STRATCOM computer.
- Update MEM documentation as required.

Objective

Maintain currency of Nuclear Weapons Effects models in MEM by incorporating latest versions of PEM, C/LAMP and HISEMM.

Customer:	Lt. Dave States, US STRATCOM/J-523 (402) 294-3997
SAIC Principal Investigator:	Mr. Joe Manship (703) 683-6242

Deliverables

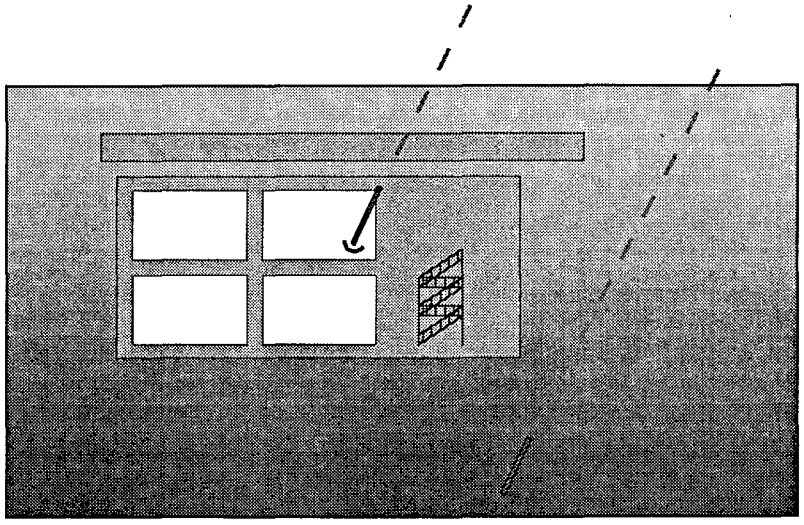
- Delivery/installation/testing of upgraded MEM software.
- Updated versions of MEM documentation describing new NWE models.
- Minutes of PEM, C/LAMP, and HISEMM users meeting highlighting model enhancements affecting MEM results.
- Host Semi-annual MEM NWE Upgrade Oversight Panel Meetings.

Benefits

- Insures the continuing credibility of the MEM code with respect to its NWE models. These models were upgraded by DNA at a cost of 700K. A modest maintenance task is vital to maintain the currency of the upgraded models.
- Planned future enhancements for the HISEMM code (e.g. tilted fireballs, gamma ionization regions, etc.) if incorporated will allow for the complete removal of old RANC4/ROSCOE encoding now required to model currently missing phenomenon. This will greatly improve MEM code structure.

Version 10.0 As of 5/25/90

Chart A-17. Advanced conventional penetrator.



Approach

- Perform penetration analyses for advanced conventional penetrators including:
  - hybrid hydrodynamic rigid penetrators
  - ICBM delivered penetrators
- Assess weapon lethality using structural response calculations to include:
  - in-structure detonation effects
  - damage effects from near-miss

Objective

Assess the lethality and targeting effectiveness of advanced conventional munitions against fixed hard targets.

Customer:	Mr. Cliff McFarland DNA/DFSP (703) 325-7115
SAIC Principal Investigator:	Ms. Suzanne Wright (703) 683-6242

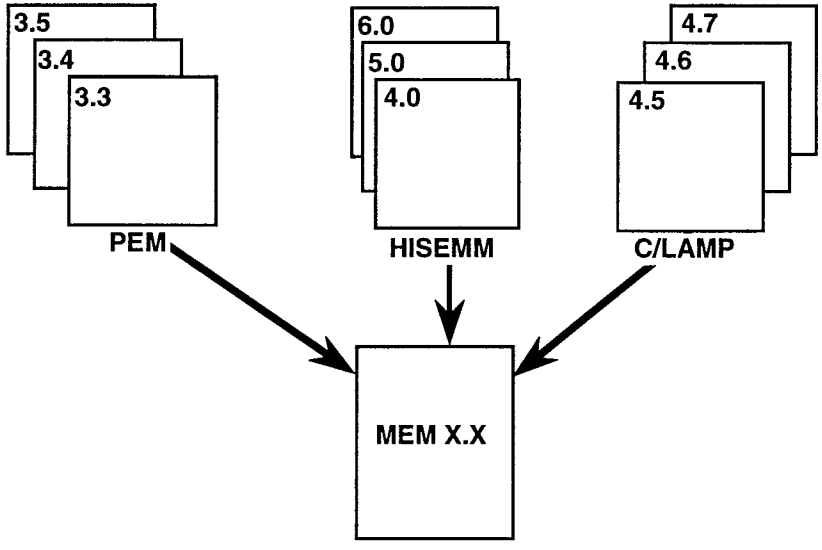
Deliverables

- Interim Progress Reports
- Briefings as Required

Benefits

- Assessment of current US conventional capability against hardened structures
- Guidance on development of near-term advanced conventional munitions

Chart A-18. Insure currency of MEM NWE models.



Approach

- Attend and actively participate in all PEM, C/LAMP and HISEMM user meetings and prepare activity reports for MEM users.
- Organize/host 2 MEM NWE Upgrade Oversight Panel Meetings.
- Incorporate new releases of PEM, C/LAMP and HISEMM into MEM as they become available:
  (1) install released code on Bellevue computer;
  (2) run installation tests to validate correct operation of code
  (3) incorporate code or subset of code in current operational version of MEM
  (4) perform test runs to validate correct installation
  (5) deliver/install/test upgraded MEM code on STRATCOM computer.
- Update MEM documentation as required.

Objective

Insure currency of Nuclear Weapons Effects models in MEM by incorporating latest versions of PEM, C/LAMP and HISEMM.

Customer:	Lt. Will Mitchell, US STRATCOM/J-523 (402) 294-1975
SAIC Principal Investigator:	Mr. Joe Manship (703) 683-6242

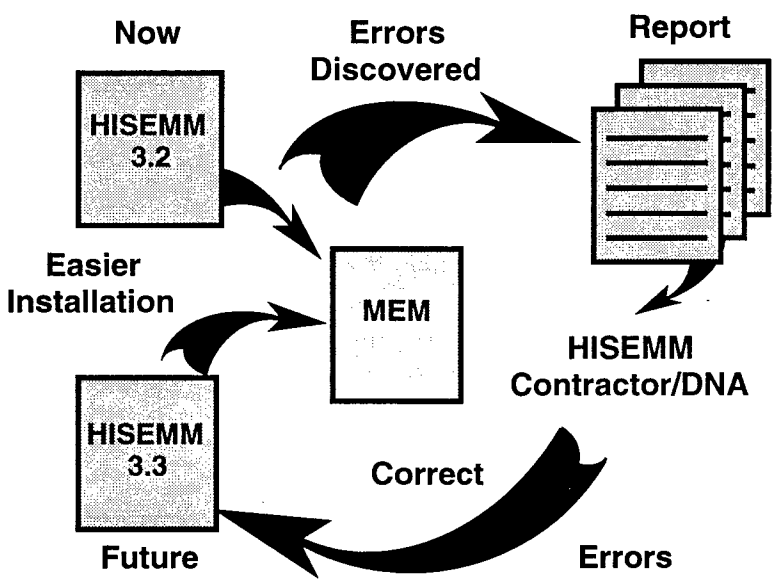
Deliverables

- Delivery/installation/testing of upgraded MEM software.
- Updated versions of MEM documentation describing new NWE models.
- Minutes of PEM, C/LAMP, and HISEMM users meeting highlighting model enhancements affecting MEM results.
- Host Semi-annual MEM NWE Upgrade Oversight Panel Meetings.

Benefits

- Insures the continuing credibility of the MEM code with respect to its NWE models. These models were upgraded by DNA at a cost of 700K. Mdest effort is needed to insure the currency of the upgraded NWE models.
- Planned future enhancements for the HISEMM code (e.g. tilted fireballs, gamma ionization regions, etc.) if incorporated will allow for the complete removal of old RANC4/ROSCOE coding now required to model currently missing phenomenon. This will greatly improve MEM code structure.

Chart A-19. Document HISEMM 3.2 errors.



Approach

- Collect diagnostics generated during HISEMM installation.
- Generate report documenting errors found:
  - Syntax errors
  - Numerical Computation errors
  - Logic errors

Objective

Formally document errors discovered during installation of HISEMM 3.2 into MEM so that HISEMM contractor can correct errors for future HISEMM releases.

Customer:	Lt Col J. Sands DNA/NACD (703) 325-1137 Capt. R. Jones DNA/RAAE (703) 325-6674
SAIC Principal Investigator:	Mr. Joe Manship (703) 683-6242

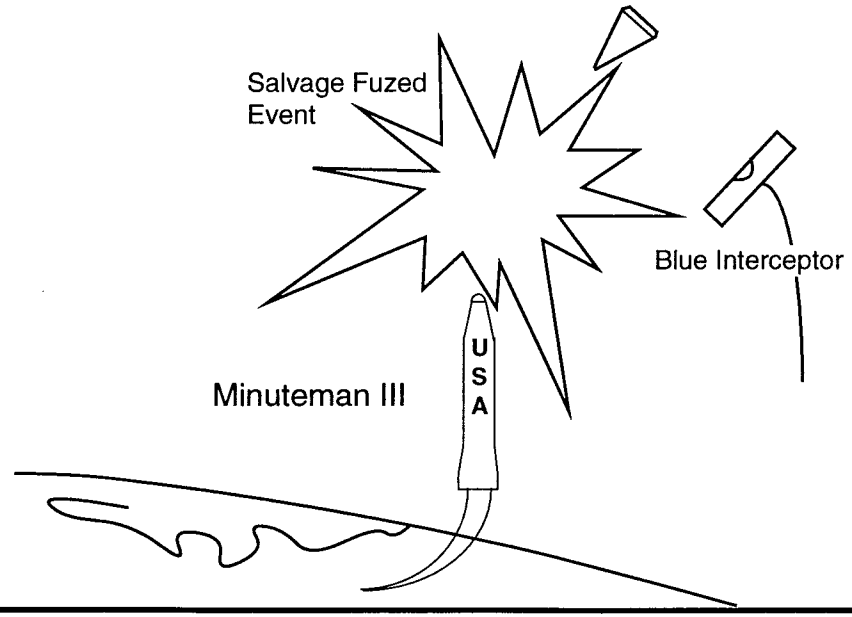
Deliverables

- Report documenting HISEMM errors and suggested corrections.

Benefits

- Will help HISEMM Developers to increase code:
  - Accuracy
  - Transportability
- Will reduce cost of future HISEMM installations for <u>all</u> users.

Chart A-20. Minuteman III review.



Approach

- Review MMIII Battlespace Conflict results
- Prepare briefing on MMIII flyout in nuclear weapon environment
- Present briefing to DNA, JSTPS and SAC

Objective

Review previous battlespace conflict work and prepare report.

Customer:	Major Larry Colbert, SAC/XRFF (402) 294-3672
SAIC Principal Investigator:	Mr. Ken Bryars (402) 291-2233

Deliverables

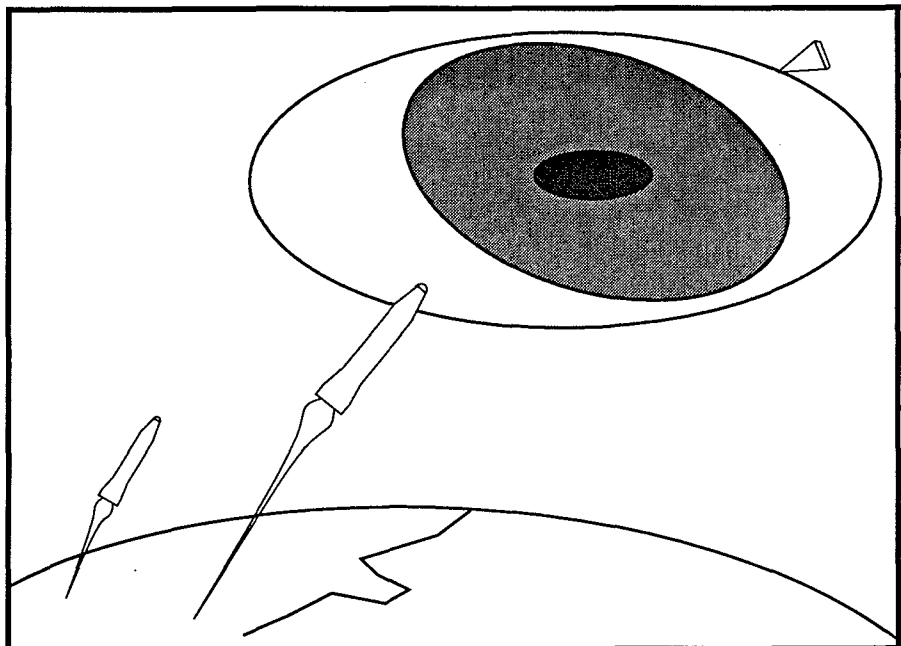
- Draft briefing (B/W), entitled "Strategic Offense - Strategic Defense Potential Battlespace Conflict" submitted March 1990. Final briefing (color) 10 May 1990.

Benefits

- Baseline for initiation of DNA analysis
- Prevent duplication of effort

Version 10.1 As of 01/15/91

Chart A-21. NWE on MMIII flyout.



Approach

- Run MOASIS against AMEM burst file for four (4) MMIII bases
- Synthesize results - error bounds, confidence levels
- Certify implications and issues
- Write subtask report/briefing
- Deliver report to DNA, JSTPS, and SAC

Objective

To determine the degree of conflict for battlespace between MMIII wings and the environments generated by defensive elements' intercepts of salvage fuzed RVs

Customer:	Major Larry Colbert, SAC/XRF (402) 294-5683
SAIC Principal Investigator:	Ken Bryars (402) 291-2233

Deliverables

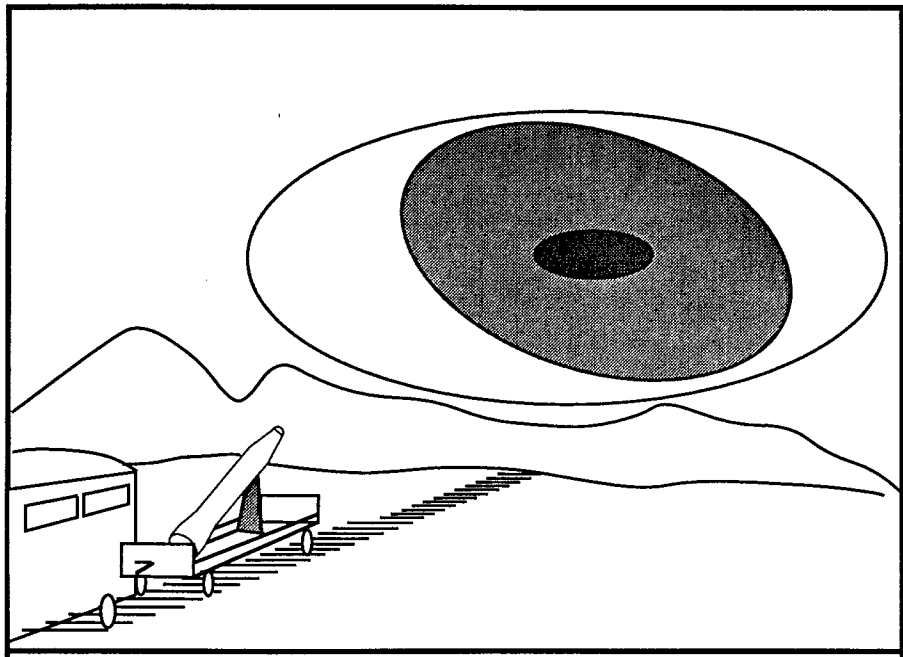
- Final facing page briefing delivered 25 October 1990

Benefits

- Statistical validation of previous SAC "snapshot"
- Introduction of Design-to-threat (DTT)
- Insight to circumvention issue

Version 10.1 As of 01/15/91

Chart A-22. NWE on Peacekeeper.



Approach

- Run MOASIS against AMEM burst file for six (6) PKRG MOBs and deployed locations
- Synthesize results - error bounds, confidence levels
- Certify implications and issues
- Write subtask report/briefing
- Deliver report to DNA, JSTPS and SAC

Objective

To determine the degree of conflict for battlespace between Peacekeeper main operating bases (MOBs) and deployed launch locations and the environments generated by defensive elements' intercepts of salvage fuzed RED RVs.

Customer:	Major Larry Colbert, SAC/XRF (402) 294-5683
SAIC Principal Investigator:	Ken Bryars (402) 291-2233

Deliverables

- Report on effects of salvage fuzing on Peacekeeper flyout

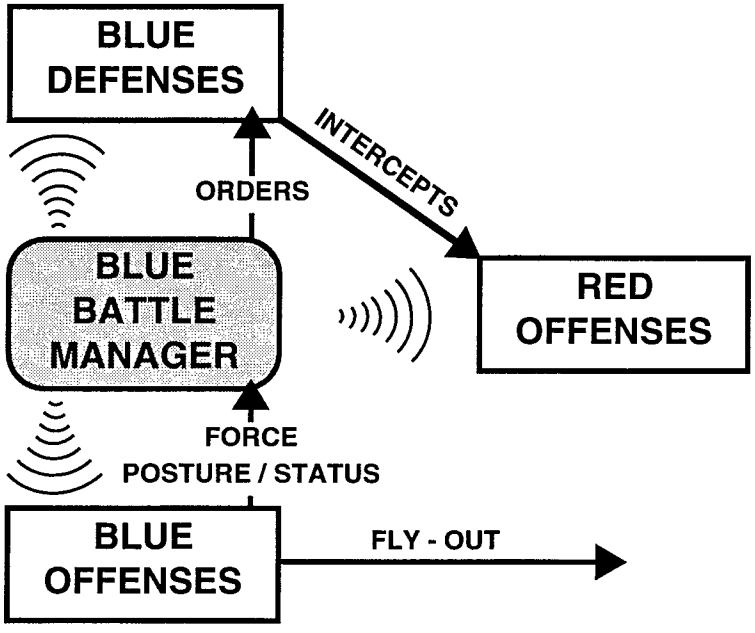
Benefits

- Insight to potential problems in PK and PKRG flyout through an on-going conflict in space

STOP WORK

Version 10.1 As of 01/15/91

Chart A-23. Battlespace management.



Approach

- Select preplanned battle manager (BM) measures to account for BLUE offense
- Select ad hoc BM measures to account for BLUE offense
- MOASIS/AMEM runs to evaluate measures in mitigating conflict
- Identify implications and issues
- Prepare and deliver report

Objective

To evaluate the effect on "Battlespace Conflict" if BLUE defensive battle manager considers BLUE offensive fly-out before engaging RED offense.

Customer:	Major Larry Colbert, SAC/XRF (402) 294-5683
SAIC Principal Investigator:	Ken Bryars (402) 291-2233

Deliverables

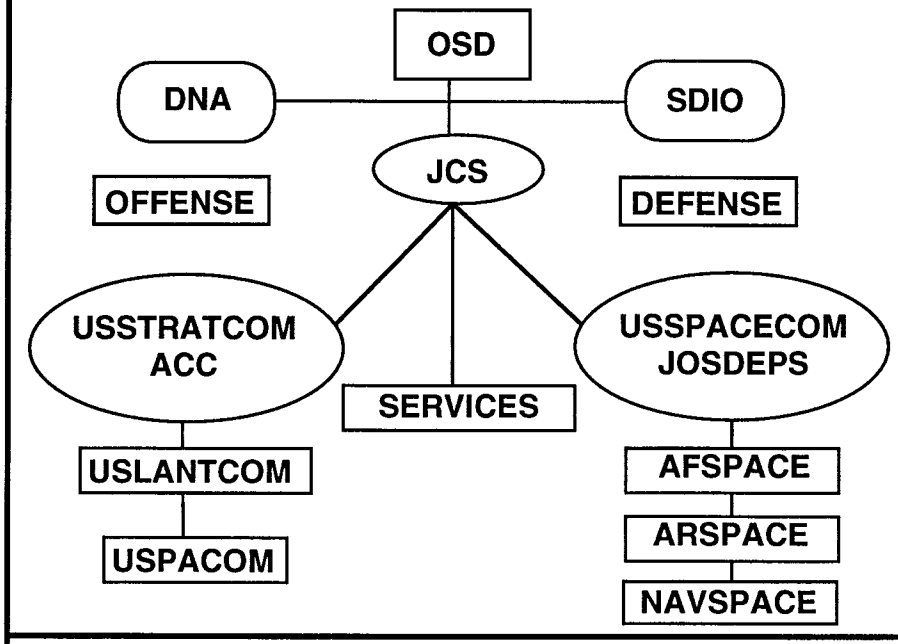
- Briefing/report on results of battle manager analysis

Benefits

- Insight to measures that may be taken to reduce Battlespace Conflict
- Enhance OFFENSE/DEFENSE interaction

Version 10.1 As of 01/15/91

Chart A-24. Offense-Defense integration.



Approach

- Maintain a network of members of the offense-defense community including OSD, DNA, SDIO, the Joint Staff, USSTRATCOM, ACC, USSPACECOM, JOSDEPS, the CINCs, and the Services.
- Participate within this community to understand the important issues associated with integrating strategic forces and build meeting agenda based on these issues. Provide supporting briefs, papers and reports as requested.
- Provide analytical and technical support to the Integrated Strategic Defense Concept Plan (ISDCP) and the Joint Strategic Defense Campaign Planning System (JSDCP).
- Provide technical and analytical support to the user community in addressing offense-defense integration (ODI) issues and the operational deployment of strategic defenses.

Objective

Technical and analytical support to the Joint Staff, STRATCOM, ACC, JOSDEPS and DNA to define and accomplish the planning and integration of our strategic forces (ODI).

Customers:	Maj (P) James A. Sands, DNA/NAFS, (703) 325-1137 Col Robert Chadbourne, the Joint Staff/J-5 (703) 693-2744 Col Dennis Shepherd, JOSDEPS, (719) 554-9688
SAIC Principal Investigator:	Mr. Norman Fennelly (703) 683-6774

Deliverables

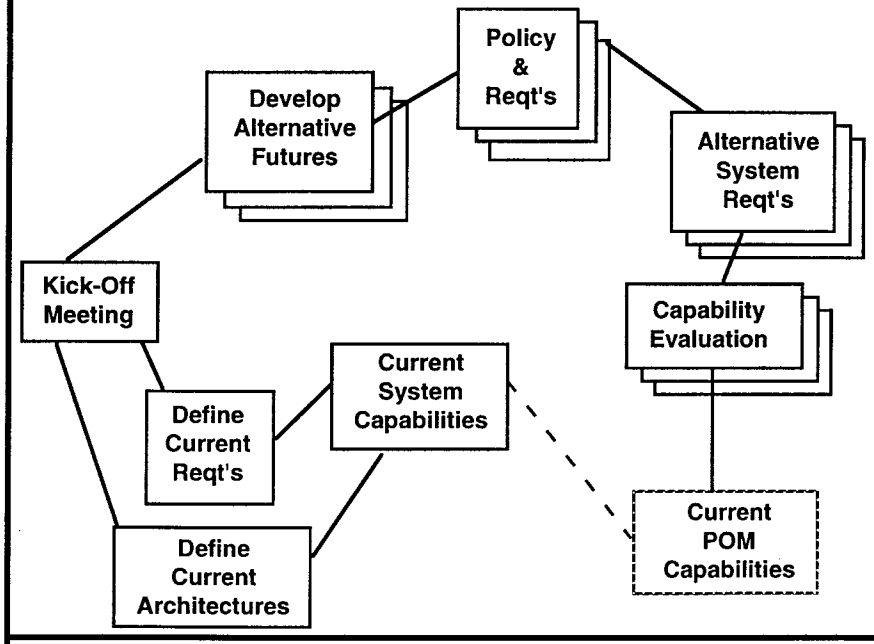
- Point papers, technical reports, issue papers, analysis summaries, and briefing materials in support of ODI.
- ISDCP and JSDCP functional descriptions and supporting documentation.
- ODI meeting agenda planning and preparation.

Benefits

- Provides the technical and analytical support required to support our Nation's evolving offense-defense strategy, doctrine, and tactics.

Version 1.0 As of 8/17/92

Chart A-25. Future C^2 capabilities.



Approach

- Establish baseline capability & requirements.
- Develop/Adopt alternative future scenarios/ probabilities/planning parameters that include:
  - Threat
  - Force Structure
  - Employment Policy
- Derive alternative system requirements.
- Assess planned (POM) system capability to meet future alternative scenario requests.
- Conduct first order probability sensitivity analysis.
- Develop, present, and revise deliverables as required.

Objective

Develop a Roadmap that depicts potential issues and milestones impacting the requirements and system needs for the nuclear command and control system for the period 1993-2003.

Customer:	Col. William J. Evans, Jr. (703) 614-5110 J-36, Chief, C2 Procedures Branch
SAIC Principal Investigator:	Mr. Norm Fennelly (703) 683-6774

Deliverables

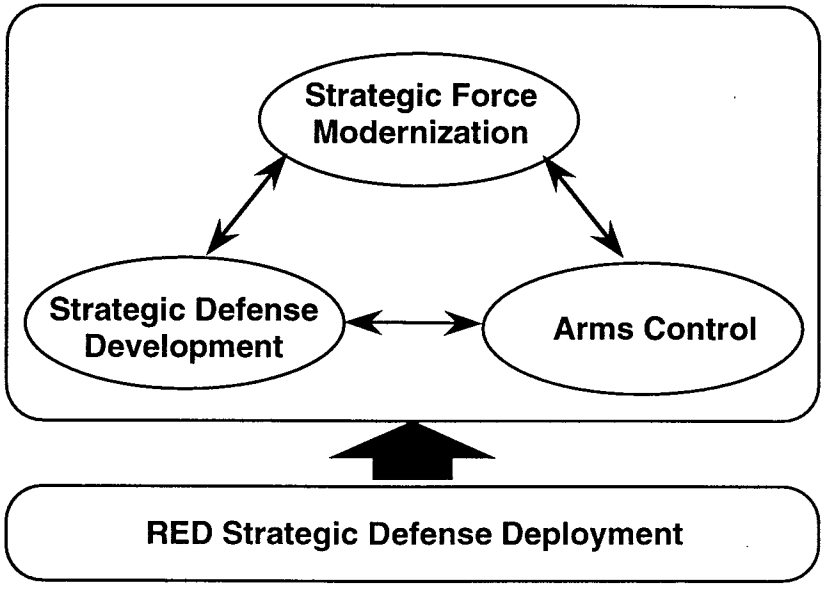
- Interim Progress
- Reports
- Point Papers
- Briefings as Required
- Draft Road Map
- Final Report

Benefits

- Provides an analytical framework to facilitate evaluation of the impact of significant changes in system capability and requirements.
- Aid in decision making.

As of 4/28/94

Chart A-26. National security and mutual strategic defenses.



Objective

In the context of the U.S. approach to strategic force-related elements of national security, identify the impact of U.S. and Soviet deployment of defenses on U.S. ability to deter attack.

Customer

Mr. Greg Schulte, OSD (202)695-5678

SAIC Principal Investigator

Mr. Edward J. Ohlert (703)683-6586

Approach

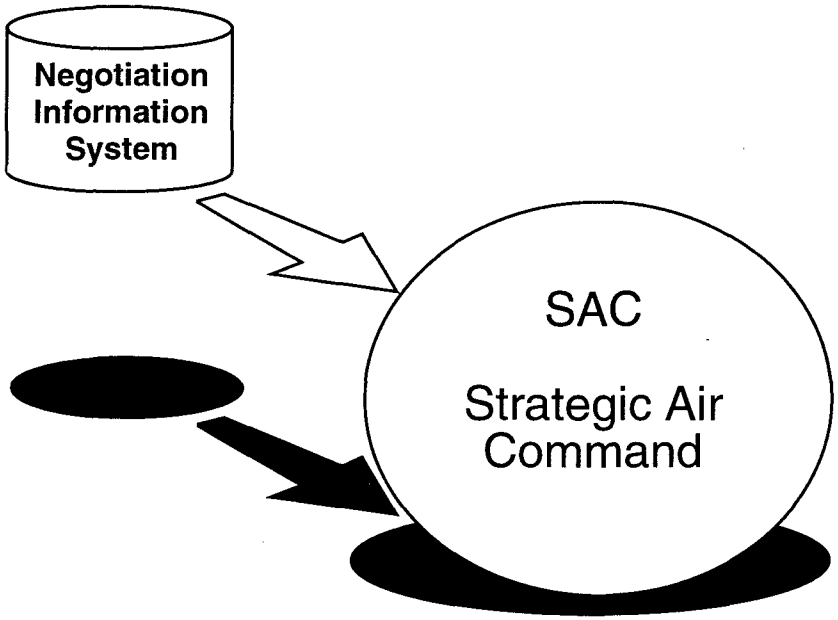
- Identify/review existing SDIO analysis
- Identify additional analysis requirements
- Conduct additional analysis
- Document results (draft)
- Coordinate within DoD
- Deliver final report

Deliverables

- Report on National Security and Mutual Strategic Defenses. Draft report entitled, "Mutual Deployment of U.S. and Soviet Strategic Defenses and National Security", SECRET, 12 April 1990, DC # SAIC/90:0081.

Version 10.0 As of 5/25/90

Chart A-27. Hosting NIS at SAC.



Objective

To provide SAC/XPXX with up-to-date negotiation information tools.

Customer

LTC B. Gifford, SAC/XPXX (402)294-7001

SAIC Principal Investigator

Mr. Robert Moser (703)556-7243

Approach

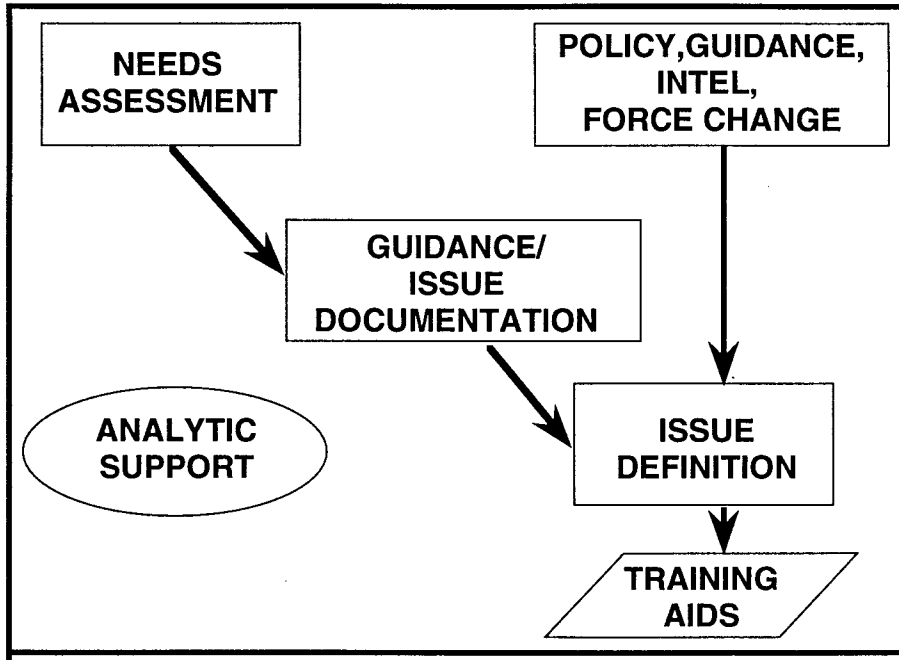
- Transport code database to SAC computers
- Install software
- Verify software

Deliverables

- Hosted Negotiation Information System (NIS) at SAC, Offutt AFB, February 1990.
- Subtask completed February 1990.

As of 6/12/90

Chart A-28. DNA support to Joint Staff/J-5.



Objective

- To develop training aids to assist assimilating the nuclear weapons employment policy and planning guidance formulation process.
- To provide analytic support as required in the development of staff positions, assessing the impact of proposed policy changes on force structure and employment, including:
  - Nuclear weapons effects calculations
  - Measures of effectiveness

Customer

LTC Bill Evans, JCS/J-5 (202) 697-6187

SAIC Principal Investigator

Mr. Edward J. Ohlert (703) 683-6586

Approach

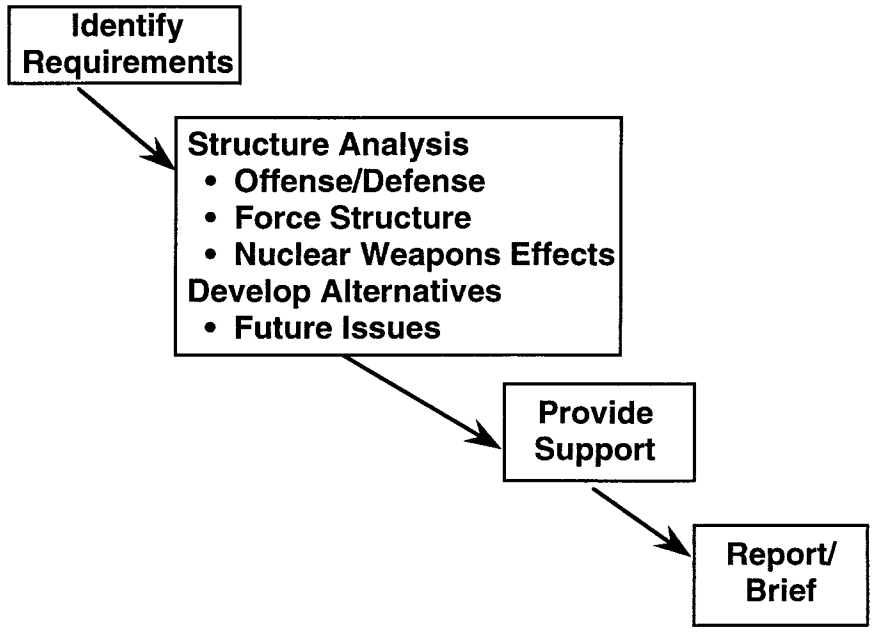
- Assess staff training needs
- Document guidance/issue summaries
- Define issues for analysis
- Provide analytic support

Deliverables

- Staff Training Syllabus Outline
- Strategic Nuclear Weapons Employment Policy: Staff Handbook
- Measures of Effectiveness Evaluation
- Analytic Summary -- as required

Version 1.1 As of 10/2/90

Chart A-29. DNA support to Joint Staff/J-8.



Approach

- Identify Requirements and Develop Analytical Methodologies
  - Strategic Offense/Defense Considerations
  - Alternative Force Structures and Employment Concepts
  - Nuclear Weapons Effects Models
- Provide Timely Analytic and Staff Support
- Report/brief Analytical Results

Objective

- To provide analytic support as required in the development of staff issues positions on:
  - Strategic Offense/Defense Integration
  - Force Posture/Force Mix
- Assist in updating and Incorporating Nuclear Weapons Effects models used in Joint Staff
- Perform Special Projects as Required

Customer:	Capt. Chris Chisholm, USN, Joint Staff/J-8 Nuclear Forces Analysis Division Chief, (703)614-8311 Maj. Raymond T. Bull (703) 325-1137
SAIC Principal Investigator:	Ms. Gael Tarleton (206) 747-7152

Deliverables

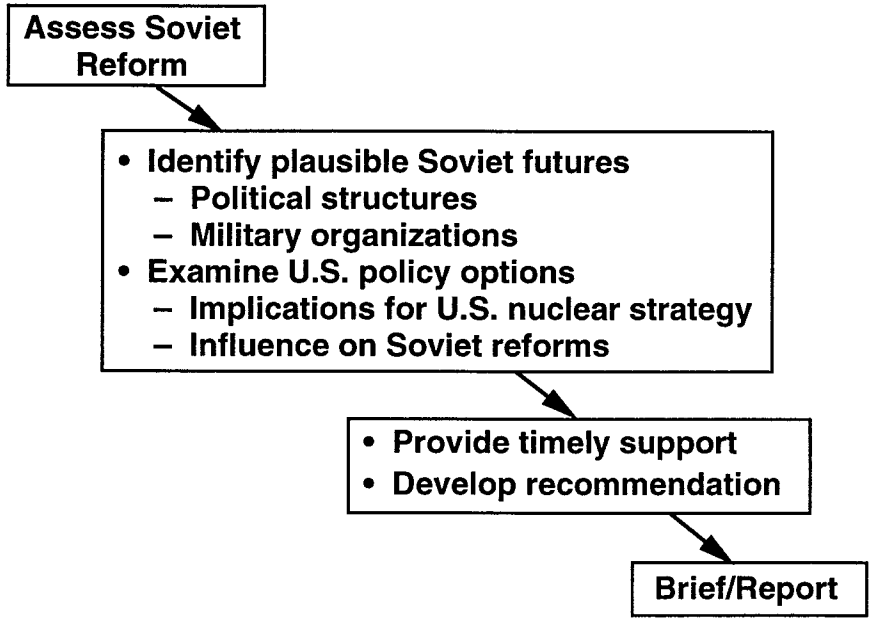
- Analysis as Required
- Summary Reports as Required
- Briefings as Required
- Periodic program review and evaluation as requested by J-8

Note: SAIC will provide fully finished briefing materials through secret classification. Top secret materials will not be removed from JCS controlled spaces.

Benefits

Version 11.0 As of 12/6/90

Chart A-30. DNA support to OSD/ISP strategic forces policy.



Approach

- Research/analyze major political and military reform proposals from Soviet and republic institutions
- Identify changes in Soviet military policy
  - Influential institutions
  - Evolving nuclear strategy
- Define relationships between center and republics
- Hypothesize alternative Soviet futures for political and military organization
- Evaluate U.S. nuclear strategy in the 1990s

Objective

- Support requirement for integrated analysis of Soviet political/military reforms
  - Center / Republic authority
  - Impact on Soviet nuclear strategy
- Propose alternative courses of Soviet behavior
- Assess U.S. strategic policy
  - Nuclear strategy adjustments
  - Future U.S. / USSR strategic relationship

Customer:	Ms. Joan Rohlfing, Strategic Forces Policy (703) 614-9534
SAIC Principal Investigator:	Ms. Gael Tarleton, (206) 747-7152

Deliverables

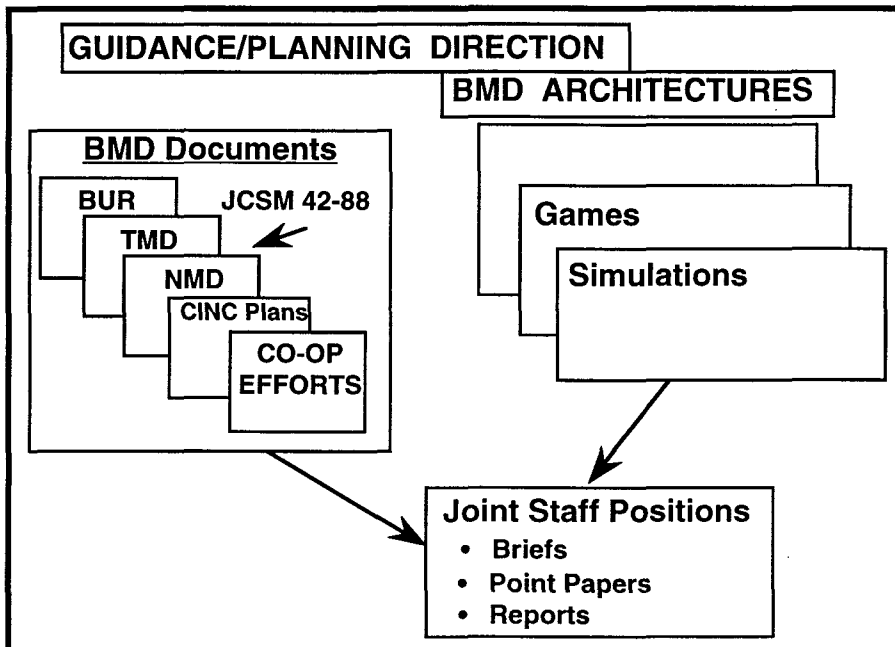
- Analysis and support as required
- Reports as requested
- Briefings as required
- Periodic program review and evaluation as requested by OSD/ISP/SFP

Benefits

- Responsive support provided OSD/ISP/SFP for assessments on status of political and military reforms in the Soviet Union and potential implications for U.S. strategic policy

Version 1.0 As of 1/21/91

Chart A-31. DNA Support to Joint Staff/J-5 Offense-Defense integration issues.



Objective

- Support Joint Staff addressal of Offense/Defense Integration Issues
  - Recommend Joint Staff positions
  - Provide Issue Analyses as Requested
  - Review documentation
  - Provide summaries/briefings as appropriate

Customer:	Col Ken Rosebush, Joint Staff/J-5 (703) 693-2744
SAIC Principal Investigator:	Mr. Norman Fennelly (703) 683-6774

Approach

- Focus on Joint Staff responses to ODI in Command Campaign Plans
- Monitor issues related to the operational deployment of strategic defenses
- Monitor Operational studies/games/simulations
- Develop recommended Joint Staff positions, with supporting rationale
- Provide supporting briefs, papers and reports as requested
- Technical and analytical support to U.S. - Russian Strategic Stability Working Group meetings
- PDD-17 support

Deliverables

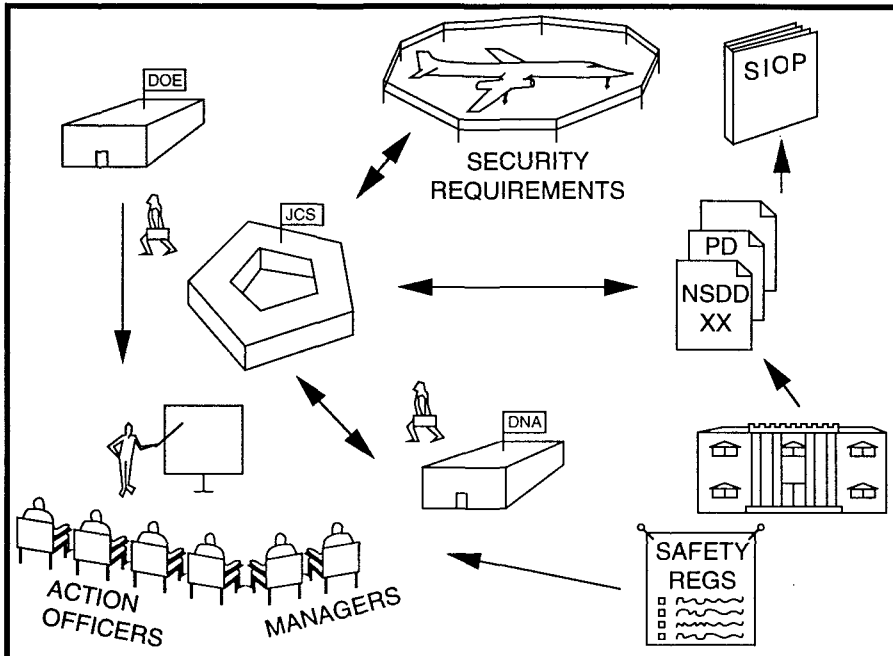
- Point Papers, White Papers, Briefings, Studies, Analysis Summaries as Required

Benefits

- Provides knowledgeable support to Joint Staff addressal of ODI issues as directed by ADM Jeremiah
- Permit rapid and thorough addressal by the Joint Staff

As of 2/28/94

Chart A-32. Introduction to nuclear weapons effects and employment planning.



Approach

- Assess scope of orientation training needs
- Review guidance/issue/policy documents
- Prepare and deliver an overview presentation to define format and scope and to solicit customer comments and recommendations
- Prepare presentations and coordinate in-house quality review, and dry runs
- Deliver set of presentations
- Conduct orientation training
- Videotape (option)

Objective

To develop a set of presentations to help staff officers and managers better understand the nuclear weapons employment policy/planning process. The presentations will complement Drell report requirements for nuclear weapons safety and security training.

Customer:	Maj Ray Bull, DNA/NASF (703) 325-1137 Col Bill Evans, JCS/J-5 (202) 697-6187
SAIC Principal Investigator	Mr. Robert K. Slaven (703)683--6531

Deliverables

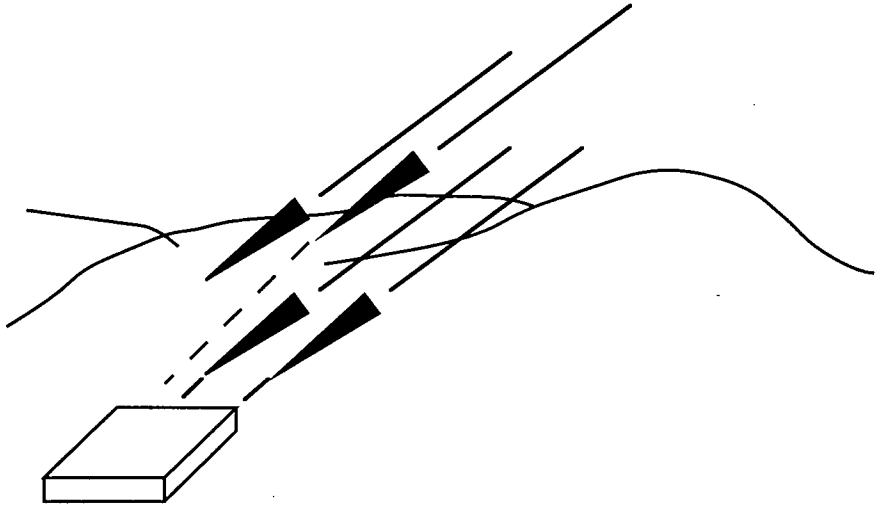
- An initial overview presentation, covering approach and scope, and establishing the format and general content of the training.
- The presentations, and smooth copies of the nine sets of supporting presentation material. The supporting material will be a document suitable for use as a training handout or for stand -alone reference use. One complete set is the approval/coordination copy, additional sets to be provided as required to support training.
- Administrative requirements to support the conduct of training in a formal presentation, including letter announcement, agenda, and action items.
- Option: one complete videotape record of the full set of training presentations (A duplicate set to be retained by SAIC).

Benefits

- Cost Effective means to provide important information to Action Officers and managers.
- Brings together information not generally available in one location/forum.

As of 5/13/91

Chart A-33. Strategic kinetic energy weapon policy issues.



Objective

Produce a report summarizing the arms control, cost, effectiveness, and policy implications of using kinetic energy penetrators in a strategic attack role.

Customer

LCDR Bob Dotson, ASD/ISP/SFP (703) 614-9534

SAIC Principal Investigator

Mr. Marc Warburton (619) 546-6368

Approach

Task 1 Data Collection
↓
Task 2 Technical/Military Assessment
↓
Task 3 Cost Assessment
↓
Task 4 Arms Control Assessment
↓
Task 5 Policy Assessment

Deliverables

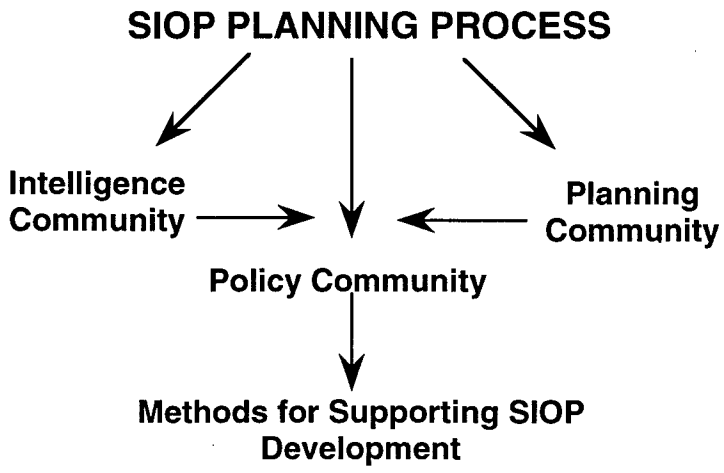
- Briefing to Working Group at the Mid-Study Meeting
- Report summarizing policy issues

Benefits

- Help ASD/ISP/SFP provide insightful and timely advice to the Secretary of Defense on an important national capability

As of 5/7/91

Chart A-34. DNA support to SIOP planning.



Approach

- Provide support by participating in a recently formed special working group to assess the SIOP planning process and the responsibilities of various agencies in SIOP development and evaluation.
- Define working group meeting agendas and objectives in consultation with customer, and prepare background papers and point papers for discussion items to be addressed by the group.
- Assist in developing final annotated briefing for delivery to senior DoD officials, including recommendations for enhanced SIOP planning support.

Objective

- Provide expert support for researching, analyzing, and assessing the current capabilities and methods for SIOP support within the intelligence, policy, and planning communities.
- Assist in coordinating the diverse interests of the working group participants in order to develop a consensus briefing for senior officials that recommends changes and enhancements to the support process.

Customer:	Mr. Gil Klinger, OSD, Strategic Forces Policy, (703) 614-9534
SAIC Principal Investigator:	Mr. Bill Hulvershorn, (703) 614-9534 or 683-1622

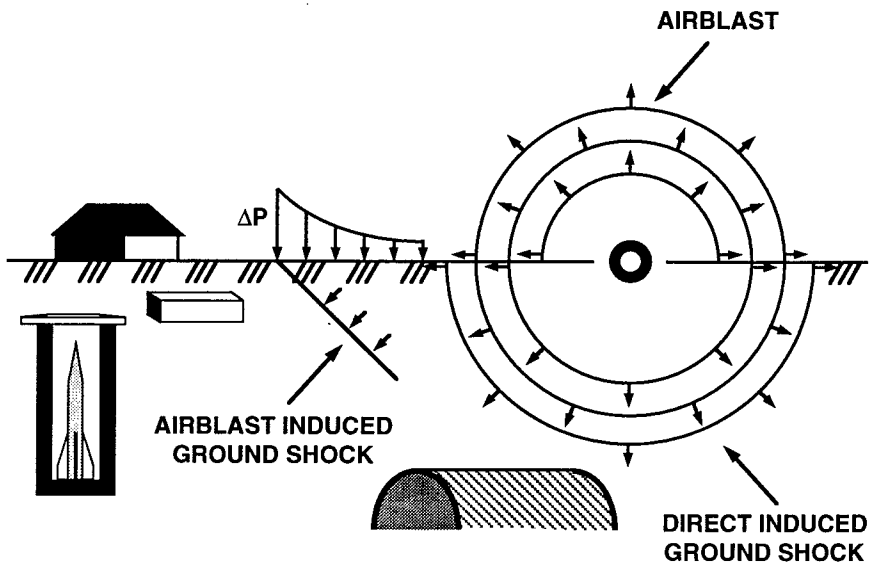
Deliverables

- Agenda planning and preparation, including point papers for discussion items
- Memorandum on findings of each working group meeting
- Final annotated briefing for senior officials, coordinated throughout intelligence, policy, and planning communities, with recommendations for enhanced SIOP planning support.

Benefits

- Understanding of new methods for ensuring effective SIOP support during period of major change in strategic planning
- Briefing to senior officials that would provide historical record of effort and serve as guideline for future SIOP support review

Chart A-35. The feasibility of EPW calculations.



Approach

- Familiarization with existing DIA and JSTPS methods for doing EPW calculations
- Survey of available alternatives
- Comparison/testing of alternatives
- Coordination with DIA/DNA
- Illustration of feasibility of selected method

Objective

To determine whether it is feasible to develop a form of EPW methodology that is compatible with existing VNTK and PDCALC formats used by the JSTPS.

Customer:	LTC Rich Hopson, JKCS (402) 294-4960
SAIC Principal Investigator:	Mr. Roger Craver (402) 291-2233

Deliverables

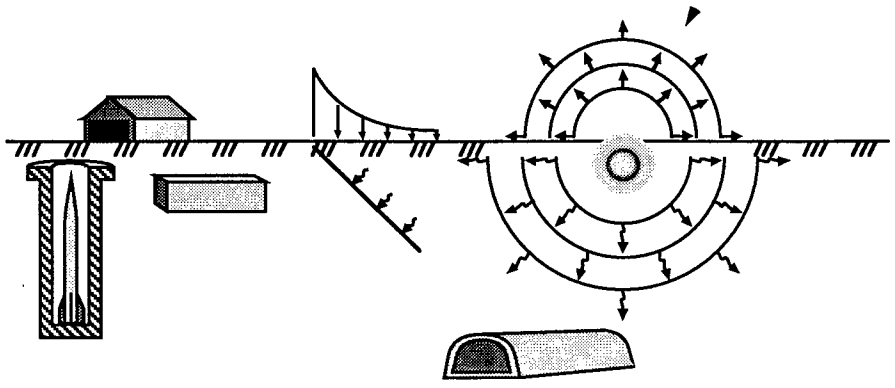
Feasibility study briefing and/or report

Benefits

- Examination of alternative methods
- Opportunity for technical coordination with DNA and DIA during development
- Proof of concept before commitment to full development

Version 11 .1 As of 12/6/90

Chart A-36. EPW PSP/DGZ methodology.



Approach

- Coordination with DIA to implement the JVN system
- Coordination with General Dynamics to incorporate uncertainties in impact velocity determinations
- Modification of PDCALC to include use of JVN's
- Development and coding of the DGZ construction process for EPW's involving PSP and WHR
- Documentation of the EPW methodology for JSTPS and assistance in shakedown tests
- Continued participation in EPW Effectiveness Group

Objective

To implement the JVN system for EPW damage calculations and develop a methodology for incorporating the probability of successful penetration (PSP) and warhead reliability (WHR) into the JSTPS DGZ construction process in a form that is operationally feasible for EPW targeting applications.

Customer:	LTC Rich Hopson, JKCS (402) 294-4960
SAIC Principal Investigator:	Mr. Roger H. Craver (402) 291-2233

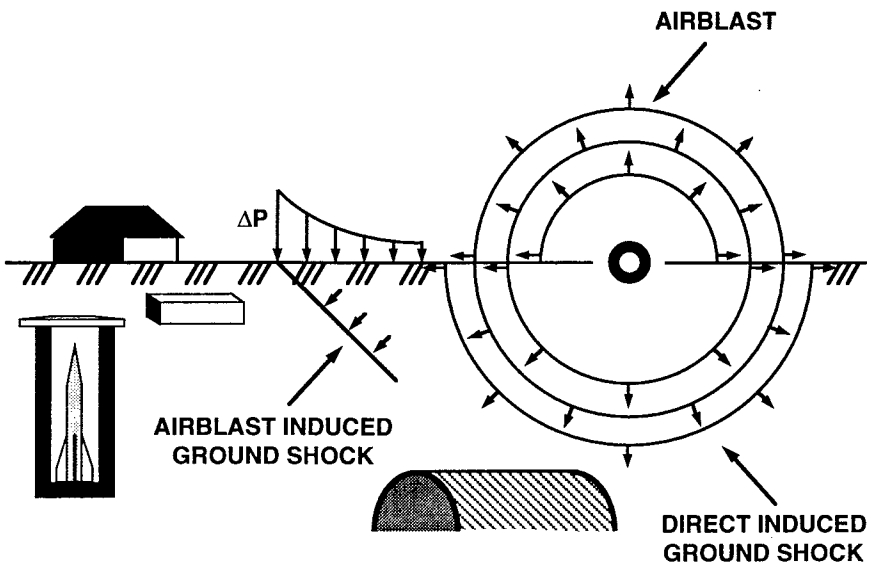
Deliverables

- Updated version of JVN methodology
- Modified version of PDCALC for use with JVN's
- DGZ construction process which uses surface feature maps and interfaces with the JSTPS RPM model
- Documentation of the JVN methodology
- Updated PENDEPTH with impact velocity uncertainties

Benefits

- Ability to do EPW calculations on line and on time for the first SIOP involving their use; avoidance of "brute force" methods in the application of EPW's
- Full use of valuable work done by the laboratories

Chart A-37. EPW comparative analysis.



Objective

To perform calculations that demonstrate the validity of the methodology.

Customer:	LTC Rich Hopson, JKCS (402) 294-4960
SAIC Principal Investigator:	Mr. Roger Craver (402) 291-2233

Approach

- Selection/acquisition of EPW models accepted as having credibility
- Performance and comparison of calculation done using selected models versus the methodology that has been developed
- Coordination with DNA, DIA, and JSTPS
- Preparation of the final report and recommendations

Deliverables

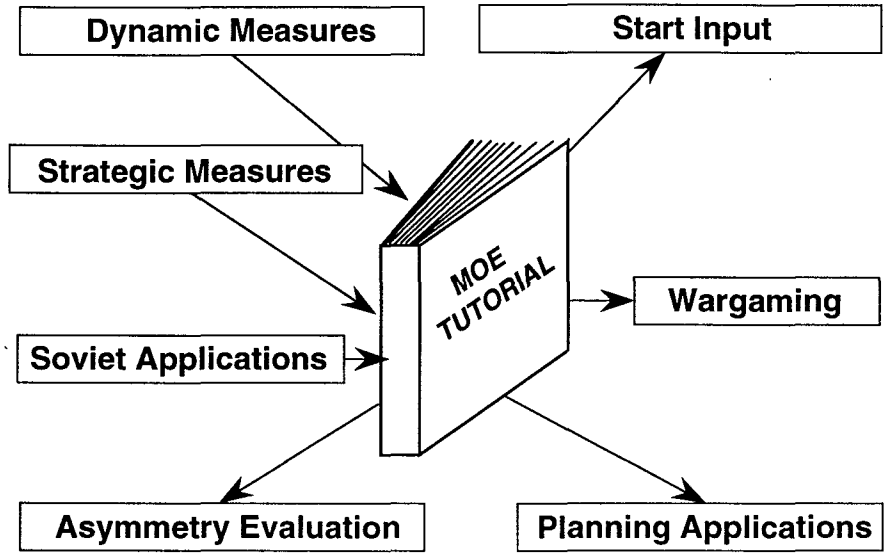
- Results of the comparative analysis
- Final report and recommendations

Benefits

- Confirmation of validity of the methodology
- Availability of insights gained and guidance for proper use of the methodology

Version 10.1 As of 12/6/90

Chart A-38. Measures of effectiveness tutorial.



Objective

To provide a clear concise summary of strategic measures of effectiveness (MOEs) and their relevance to U.S. nuclear targeting policy. Format addresses the definition, calculation and utility vs. limitations of the various MOEs.

Customer

Maj. James A. Sands DNA/NASF (703)3 25-1137

SAIC Principal Investigator

Mr. Roger Craver (402) 291-2233

Approach

- Provide a brief overview of the key players and procedures in U.S. targeting policy
- Define static vs. dynamic MOEs; identify uses and limitations
- Compare key Soviet considerations to those of the U.S. in MOE applications
- Highlight the most important aspects of understanding and applying strategic MOEs

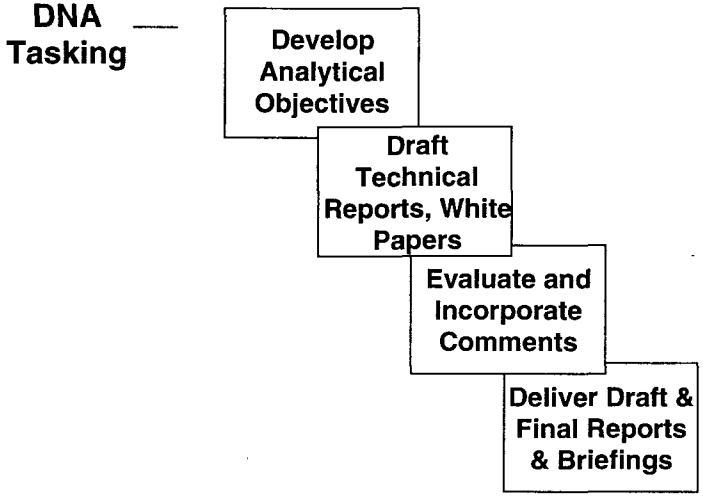
Deliverables

- Annotated briefing entitled "Strategic Measures of Effectiveness and U.S. Targeting Policy - A Tutorial" suitable for use either as an introduction to the subject or as a reference document (approximately 85 copies delivered)
- Subtask completed 2 March 1990

As of 6/4/90

Chart A-39. JCS J5/J8 support.

J5/J8 Analytical Requirements



Objective

To provide analytical support through the DNA representative in areas of JSCP planning and employment to include fire VNs, MOEs, offense/defense integration, and planning guidance.

Customer

Maj. Raymond T. Bull, DNA/NASF (703) 325-1137

SAIC Principal Investigator

Mr. Ed Ohlert (703) 683-6586

Approach

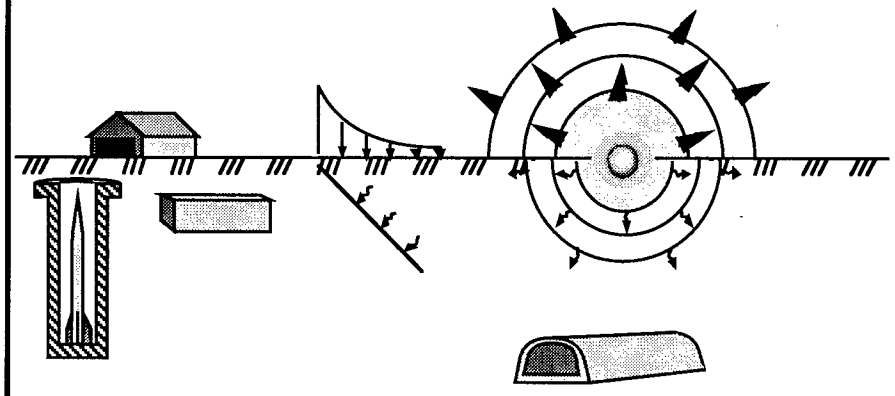
- Develop analytical study objectives in consultation with DNA designated OPR
- Prepare draft technical reports and white papers for review by DNA designated POC in J5/J8
- Collect, evaluate and incorporate recommended improvements to draft materials
- Provide technical interchange meeting support as required, including meeting support

Deliverables

- Technical analysis, white papers, draft reports, and briefing materials

As of 5/25/90

Chart A-40. VNTK methodology.



Approach

- Coordination with JSTPS and DIA on the "G" VN methodology
- Modification of PDCALC to accommodate the GVN methodology
- Documentation of the methodology for JSTPS and technical assistance in shakedown tests

Objective

To implement the "G" VN system for deeply buried targets and make the PDCALC modifications necessary for on-line calculations at JSTPS.

Customer:	LTC Rich Hopson, JKCS (402) 294-4960
SAIC Principal investigator:	Mr. Roger H. Craver (402) 291-2233

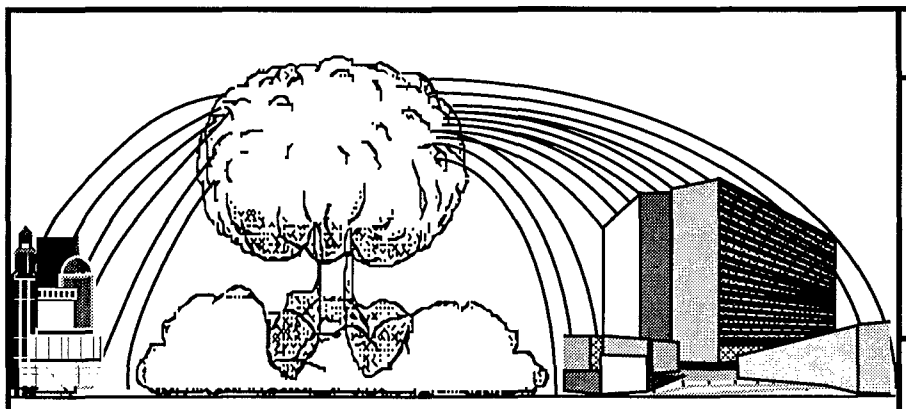
Deliverables

- Updated version of the GVN methodology
- Modified version of PDCALC for use with GVN's
- Documentation of the GVN methodology

Benefits

- Ability to do DBT calculations on line without the use of separate physical vulnerability data sheets which require "brute force" methods
- Applicability to earth penetrating weapons if R& D work in that area is reinstated

Chart A-41. Area denial.



Objective

To determine the utility of developing a methodology/MOE for USSTRATCOM that includes the impact of fallout effects in achieving effective denial or delay of enemy access to key installations as a result of US nuclear strikes, with a view to using fewer weapons or smaller yields than are required when prompt effects alone are considered.

Customer:	STRATCOM J535, LTCOL Hopkins (402) 294-4960
SAIC Principal Investigator:	Mr. Roger Craver (402) 291-2233

Approach

- Phased approach:
  - Examination of utility using an exemplar case
  - Extension of the methodology to general use if it is found to have utility
- The exemplar case:
  - USSTRATCOM provides a limited number of Z or H type targets to be attacked by surface burst
  - DIA specifies criteria for severe and moderate damage for the installations of interest
  - SAIC performs fallout calculations that include consideration of winds, exposure criteria, and shift-work scenarios for personnel at critical enemy facilities affected within a selected radius of the burst
- Probability distribution curves are developed to show denial/delay times compared to repair times and number of repair crews required
- Impact on casualties and economic value evaluated
- Utility is assessed

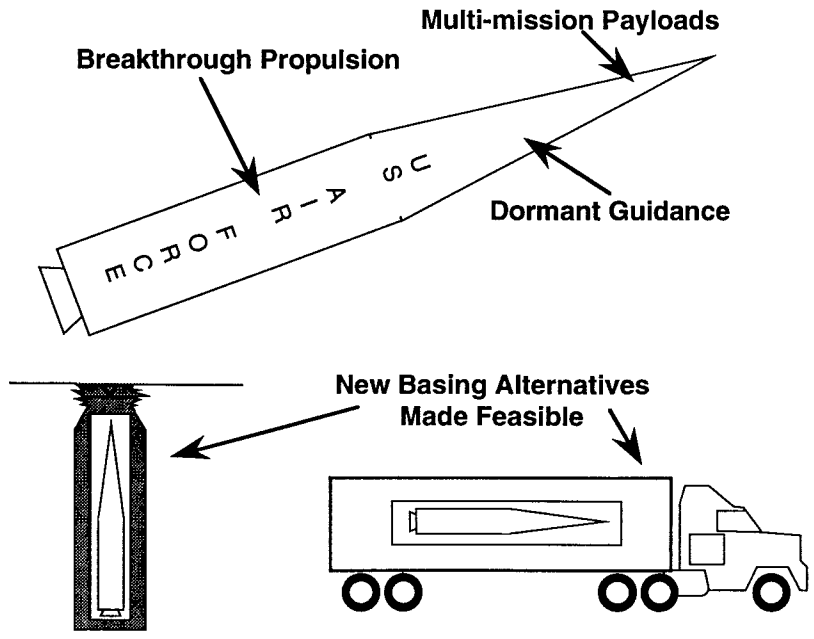
Deliverables

- Briefing for STRATCOM which shows results of the exemplar case delay times, repair crew requirements, casualties, productive value denied, and recommendations regarding utility
- Development of a methodology for general use if it is found to have utility

Benefits

- Ability to include the impact of fallout as well as prompt effects on denying or delaying enemy access to their facilities
- Potential use of lower prompt damage criteria while still achieving desired access denial or repair delays
- Potential reduction in number of DGZ's/weapons needed

Chart A-42. Advanced missile and basing concept design.



Objective

Define the impact dormant guidance and breakthrough technologies would have on ICBM missile cost, size, basing, preservation of location uncertainty (PLU), and price-to-attack. Provide resultant conceptual designs of ICBMs and their basing concepts using these technologies.

Customer

Capt. Ron Marx, SAC/XRQ (402)2 94-6236

SAIC Principal Investigator

Mr. Marc Warburton (619) 546-6368

Approach

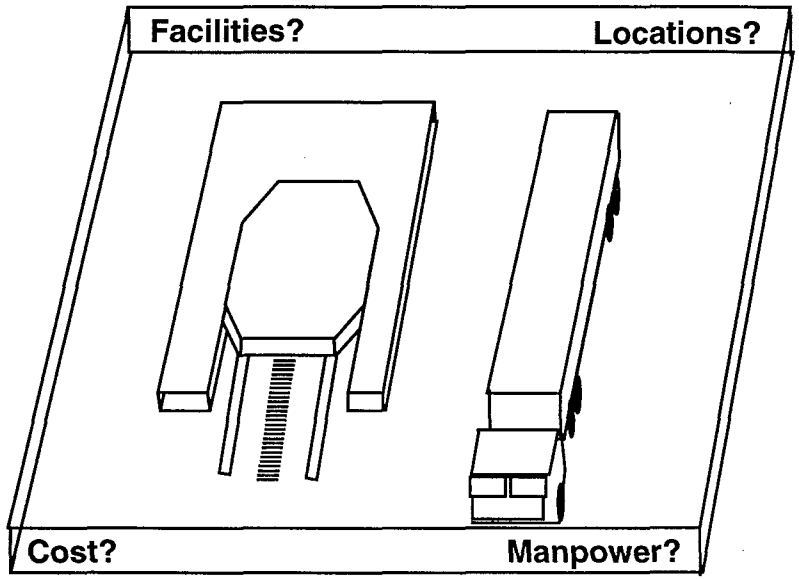
- Define study assumptions
- Synthesize missile design options
- Define basing options and operations concept
- Compare and contrast the missile and basing options generated
- Prepare study results documentation

Deliverables

- Report documentary study results
- Briefing to summarize report

As of 5/25/90

Chart A-43. SICBM basing without Minuteman II.



Does this still make sense?

Objective

Reassess SICBM/HML basing assuming the possible retirement of Minuteman II. Reconsider such factors as deployment locations, peacetime and wartime operations, physical security, public interface, survivability, manpower and cost. Compare this deployment with Southwest basing and any other concept showing promise. Provide a recommendation on the preferred basing mode for SICBM/HML.

Customer

Capt. Ron Marx, SAC/XRQ (402) 294-6236

SAIC Principal Investigator

Mr. Marc Warburton (619) 546-6368

Approach

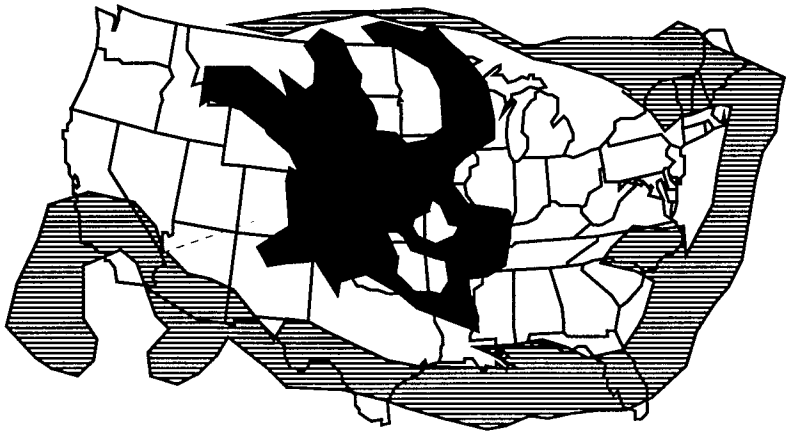
- Reassess HML/MM basing concept
- Reassess HML/Southwest basing concept
- Develop a conceptual basing concept
- Compare basing alternatives
- Prepare study results documentation

Deliverables

- Report documentary study results
- Briefing to summarize report

As of 5/25/90

Chart A-44. Fallout risks to HML operations.



RISK-DOSE: 6-MONTH DOSES: 90TH-%ILE

Objective

Assess fallout risk to potential HML deployment locations' estimate safe reenter times for maintenance, recovery and/or sustained operations for all CONUS area within 900 mile radius of either Malstrom or Warren AFB.

Customer

Capt. Andrew Manley, SAC/XOKM (402) 294-4464

SAIC Principal Investigator

Mr. Eugene Swick (619) 546-6487

Approach

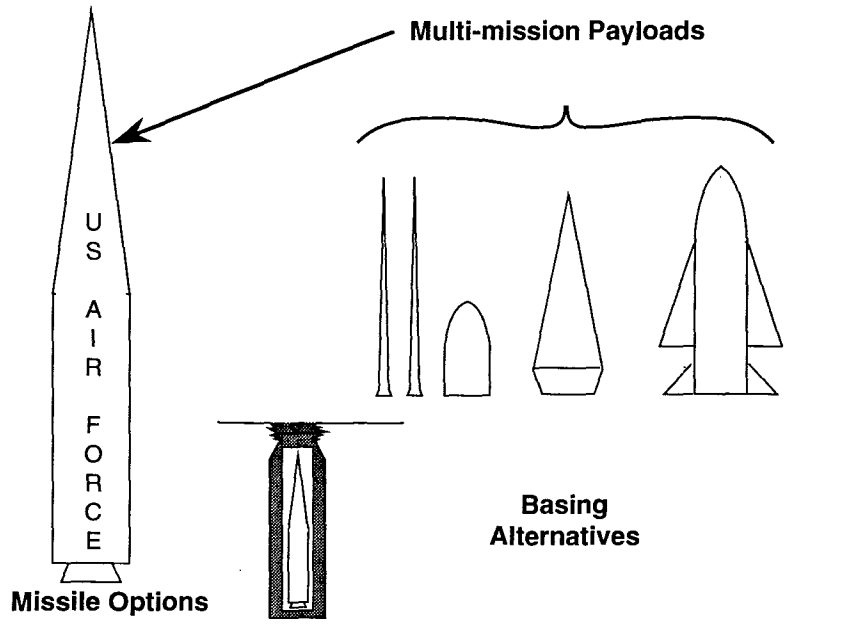
- Modify existing unclassified OSD Strike File with SAC specified targeting changes
- Determine wind sets that capture most of the expected variation in fallout with changes in wind patterns
- Calculate fallout patterns and risk dose maps with FAS for each wind set and strike file
- Provide maps and contours useful to assess HML deployment areas and estimate safe re-enter times

Deliverables

- Fallout risk dose maps for times out to six months for all CONUS area within 900 miles of Malstrom or Warren AFB
- Safe re-enter contours for 12 hour and sustained operation based on 200 rad exposure for times out to six months for all CONUS area within 900 miles Malstrom or Warren AFB

As of 11/9/90

Chart A-45. ICBMs for the 21st century.



Objective

Define ICBM requirements to support new missions.
Assess current ICBMs ability to meet requirements.
Develop a conceptual ICBM optimized to meet requirements.

Customer

Capt. Ron Marx, SAC/XRQ (402) 294-6236

SAIC Principal Investigator

Mr. Marc Warburton (619) 546-6368

Approach

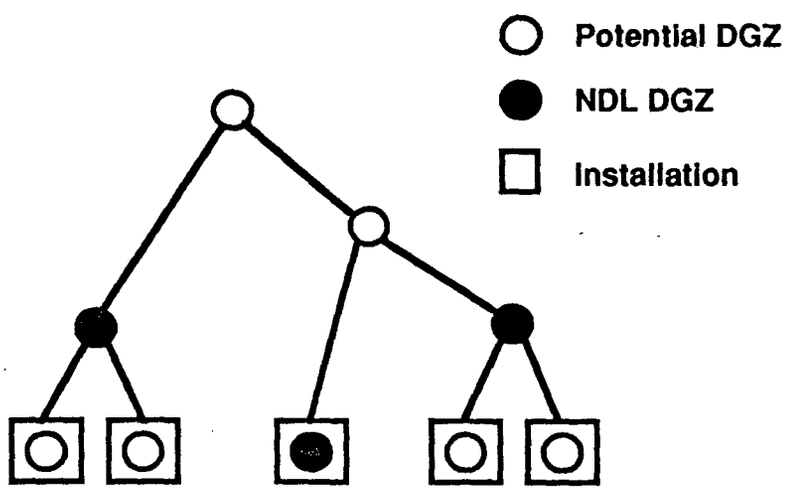
- Analyze future mission requirements
- Determine ICBM and basing system requirements
- Determine current ICBM characteristics
- Analyze current ICBM capabilities
- Generate conceptual missile and basing design

Deliverables

- Final report documentary study results
- Briefing to summarize final report
- Monthly progress reports

As of 5/25/90

Chart A-46. Enhancing the NDL developing additional NDL DGZs.



Approach

- Investigate development and maintenance factors in adding additional DGZs used to enhance the NDL
- Identify new graphic requirements for displaying enhanced NDL DGZs
- Assess hardware and software implications

Objective

Determine the feasibility of adding additional DGZs to enhance the National DGZ List (NDL)

Customer:	JSTPS/JLWD Maj. Keith Hendrickson (402) 294-6192
SAIC Principal Investigator:	Dr. Carl Rindfleisch, Jr. Mgr. Div. 478 (619) 546-6390

Deliverables

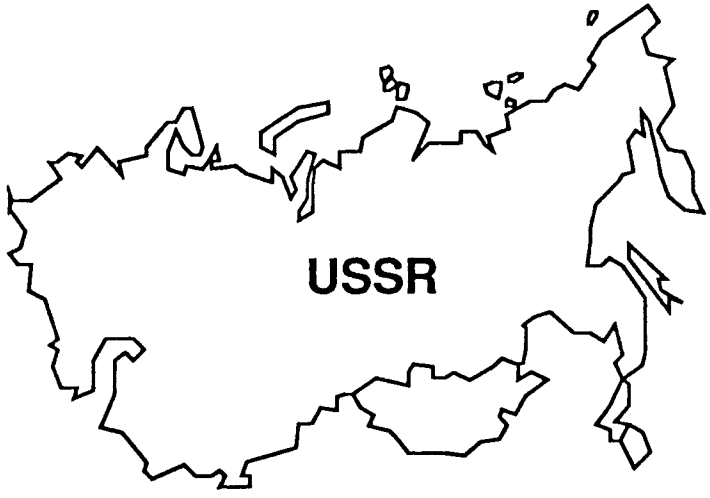
- Briefing - TRICOMS NDL enhancement and JLWD NDL development investigation
- Final Report

Benefits

- More usable DGZs for SIOP development
- More relationships between DGZs
- Better installation coverage

As of 4/19/90

Chart A-47. Blue book optimizer coder.



Objective

To investigate alternative technology for application in automating the Blue Book.

Customer

Captain Mike Winfrey JSTPS/JKCF (402)294-7868

SAIC Principal Investigator

Mr. Eugene Swick (619) 546-6487

Approach

- Review available map capabilities; identify and install one satisfactory for the BBOC application
- Identify the requirements for installing and interfacing JKCF's LISP-based program with I-80 and TRICOMS

Deliverables

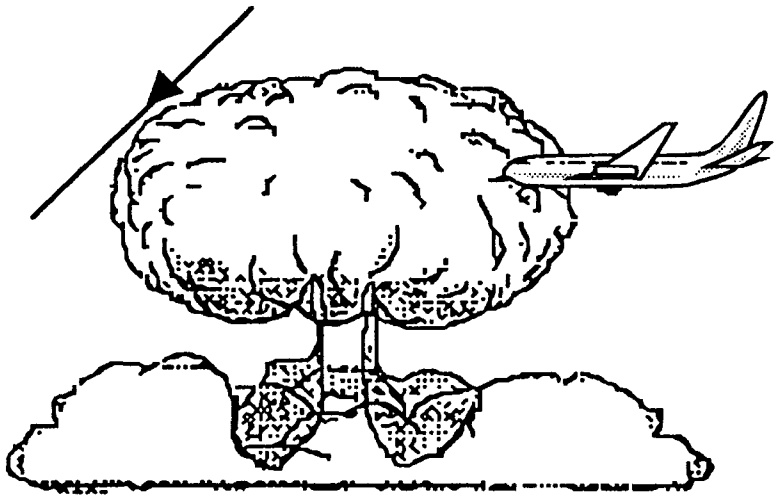
- BBOC map capability on MicroExplorer and Sun Workstation
- Report/Briefing on the investigation of interfacing JKCF's LISP-based program with I-80 and TRICOMS

Benefits

- Provide graphical context for Target Selection Function
- Improved "rule based" target selection process

Version 1.2 As of 11/29/90

Chart A-48. Review of Combined Timing and Resolution (CT&R) code.



Approach

- Review Air Force and Navy concepts for treating fratricide; determine the implications for code modifications needed to accommodate both .
- Determine code outputs required by the Air Force and Navy.
- Develop specific recommendations for making the code more user friendly.
- Develop specific recommendations for providing faster run times.

Objective

To continue review of the code and develop specific recommendations for modifications that will permit incorporation of Air Force and Navy wind-driven fratricide models, make the code more user friendly, and provide faster run times.

Customer:	Capt. M.R. Tollefson, USN, JPP POC: LTC Jim Kinsey, JPPP (402) 294-5070
SAIC Principal Investigator:	Mr. Roger Craver (402) 291-2233

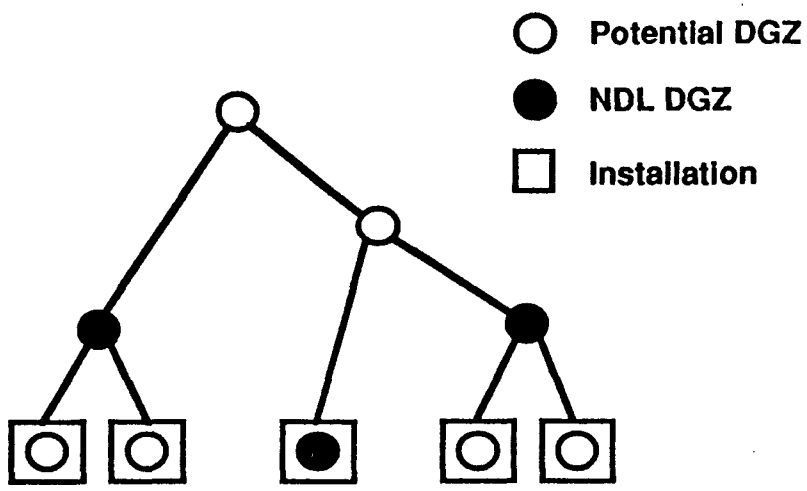
Deliverables

- Report on modifications required to meet the objectives.

Benefits

- Availability of specific recommendations for :
  - Reconciling/integrating Air Force and Navy concepts for treating fratricide
  - Improving user friendliness
  - Improving run times

Chart A-49. Enhancing the NDL SIOP development interfaces.



Approach

- Develop prototype NDL IDMS database representations
- Assess impact on NDL SIOP development process interfaces:
  - Weapon Allocation
  - Weapon Application
  - Consequences Of Execution
- Identify alternative DGZ naming conventions

Objective

Investigate interfaces of the enhanced NDL with the SIOP development process

Customer:	JSTPS/JLWD Maj. Keith Hendrickson (402) 294-6192
SAIC Principal Investigator:	Dr. Carl Rindfleisch, Jr. Mgr. Div. 478 (619) 546-6390

Deliverables

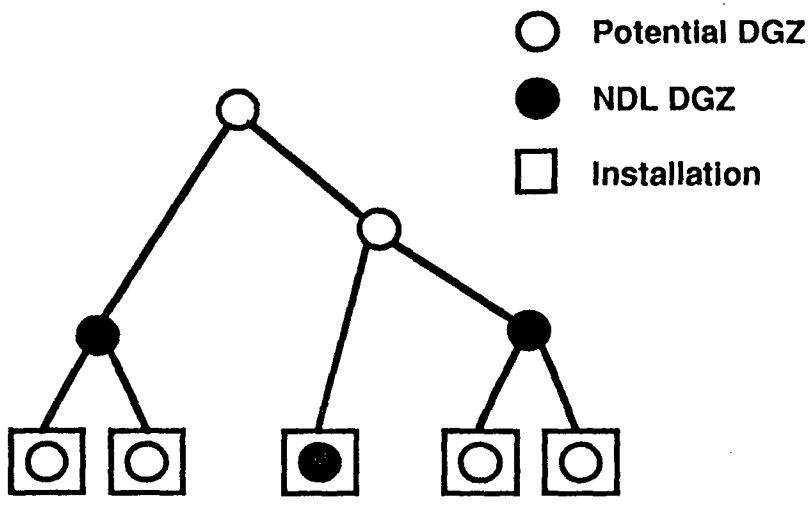
- Briefings - Enhanced NDL/SIOP development process interface investigation
- Final Report

Benefits

- Reduced SIOP Development Time
- More DGZs for each option
- Increased target damage expectancy (DE)
- Reduced undesirable collateral damage

As of 11/20/90

Chart A-50. Enhancing the NDL impact and implementation.



Approach

- Evaluate improvements to the SIOP development process using selected test cases
- Develop specific recommendations for implementation
- Develop implementation plan

Objective

Document the impact of enhancing the National DGZ List (NDL) and develop an approach for implementing the enhanced NDL.

Customer:	JSTPS/JLWD Maj. Keith Hendrickson (402) 294-6192
SAIC Principal Investigator:	Dr. Carl Rindfleisch, Jr. Mgr. Div. 478 (619) 546-6390

Deliverables

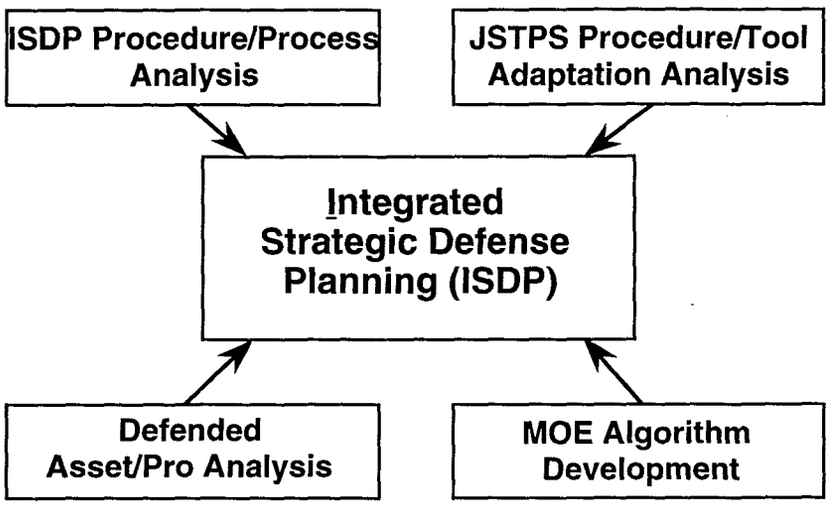
- Briefing - Improvements to SIOP development process
  - Recommendations
  - Implementation plan
- Final Report

Benefits

- Tested approach
- Assessment of SIOP process improvements
- Recommendations and implementation plan

As of 11/30/90

Chart A-51. DNA analytical support to JOSDEPS.



Objective

To provide analytical support in areas of strategic defense planning, offense-defense integration, MOE algorithm development, defended asset list/pro concept development.

Customer

Col Charles Rush , JCS/JOSDEPS (719) 554-9688

SAIC Principal Investigator

Mr. Gil Johnson (719) 576-2181

Approach

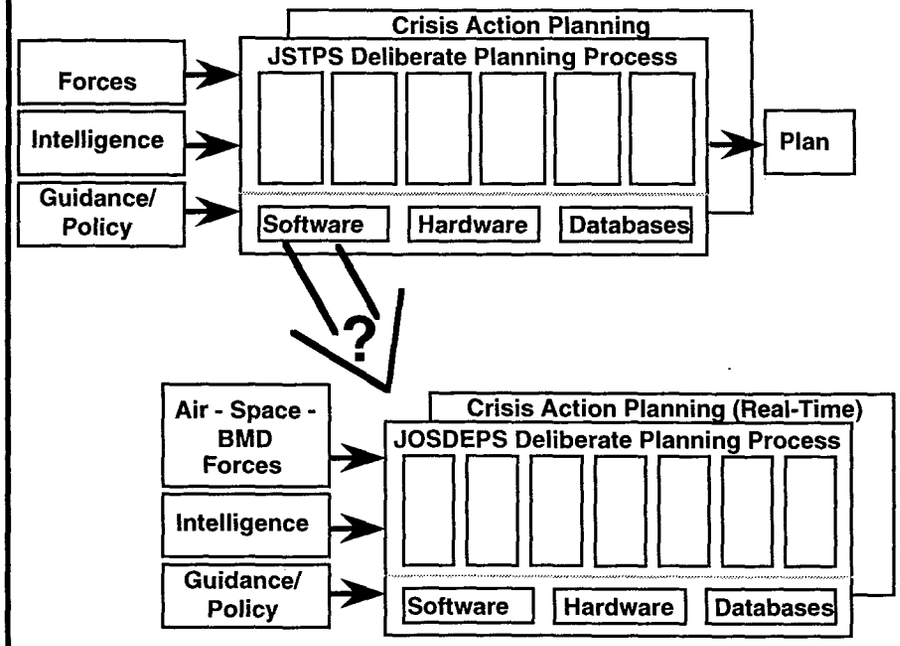
- Conduct Integrated Strategic Defense Planning analysis
- Conduct JSTPS Tools/Procedures Adaptation analysis
- Conduct Defended Asset/Preplanned Response Option analysis
- Develop an integrated MOE algorithm that relates to probability of engagement, probability of kill, defended assets and assets saved

Deliverables

- Technical Reports, Briefing Materials with supporting analysis
- Integrated MOE algorithm
- Informal Reports as required

Version 11.0 As of 9/23/90

Chart A-52. JOSDEPS-JSTPS tool application and roadmap.



Approach

- Develop Plan for SIOP tool applicability evaluation based on initial review
- Obtain DNA/JOSDEPS work plan approval
- Expand JOSDEPS planning process description, including potential hardware/software/database architecture, conduct A/O interviews, develop Roadmap
- Expand descriptions of the 22 candidate software tools
- Revise/iterate Roadmap
- Evaluate software tools for applicability
- Provide final report briefing, Roadmap

Objective

Investigate/Identify existing software tools in use by JSTPS and evaluate their adaptability to JOSDEPS use

Customer:	LTC Chisholm, JOSDEPS (719) 554-3492 LTC Green, JOSDEPS (719) 554-9688
SAIC Principal Investigator:	Mr. Phil Burcher (703) 683-6774

Deliverables

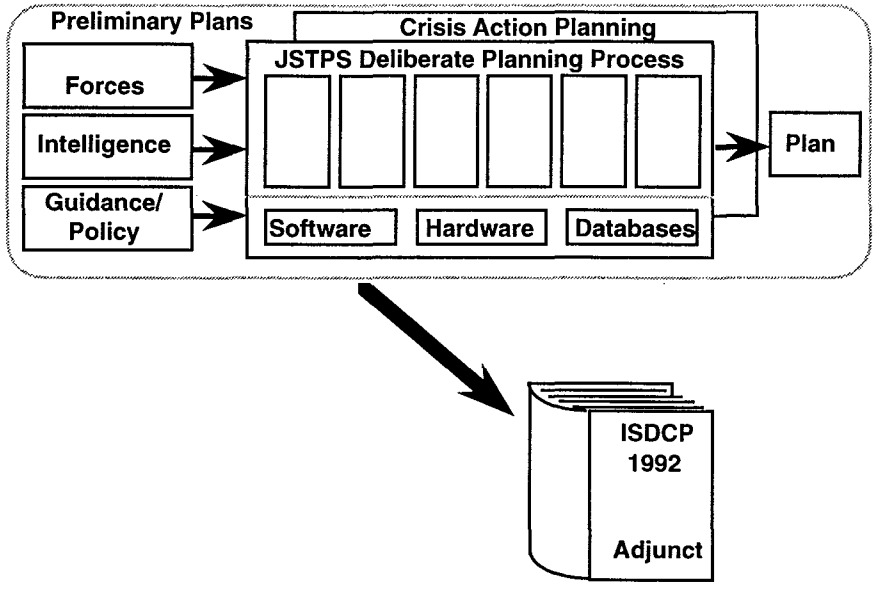
- Work plan
- Recommendations for JSTPS tools applicability to JOSDEPS
- JOSDEPS Roadmap

Benefits

- Provides information as to useful tools that may be available for use in integrated defense planning

As of 3/13/91

Chart A-53. Joint Strategic Defense Operations Planning System.



Approach

- Develop Plan for Joint Strategic Defense Planning System preliminary operational description
- Obtain DNA/JOSDEPS work plan approval
- Define and document the Joint Strategic Defense Planning process for inclusion in an adjunct or an addendum to the ISDCP
- Provide final technical report suitable for distribution with the next iteration of the ISDCP (ISDCP 92)

Objective

Investigate/Identify existing software tools in use by JSTPS and evaluate their adaptability to JOSDEPS use

Customer:	LTC Green, JOSDEPS (719) 554-9050
SAIC Principal Investigator:	Mr. Phil Burcher (703) 683-6774

Deliverables

- Work plan
- Draft ISDCP Adjunct/addendum describing:
  - Defense planning system objectives
  - Defense planning system
  - Functional flow charts and diagrams

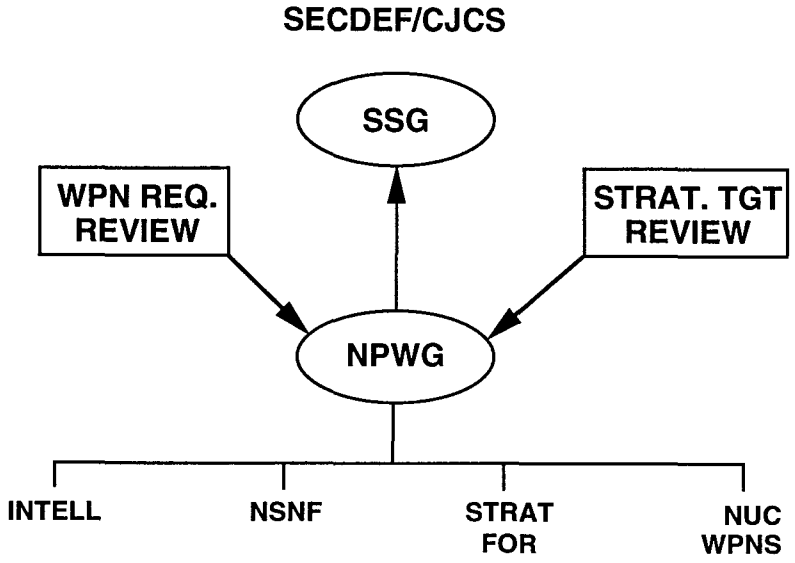
Benefits

- Provides advance information on currently planned defense system for review and comment within the offense/defense community

As of 6/16/91

Chart A-54. SIOP-94 replanning study.

STRENGTHENING NUCLEAR PLANNING



Approach

- Prepare and present, in the form of a briefing, a historical background of events leading to the establishment of the NPWG
- Prepare papers on each issue addressed by the working group. Review of several issues already directed. Others will be assigned as appropriate.
- Attend NPWG meetings when directed, document group proceedings and assist DNA representative in preparing for each meeting and summarize NPWG activities for DNA management. Provide assessment of actions taken/recommendations made during these meetings.

Objective

Provide support to the DNA representative to the NPWG and support to OSD/ISP/SFP. Support should include background analysis, advice and administrative assistance.

Customer:	DNA Representative to NPWG
SAIC Principal Investigator:	Mr. Norman Fennelly (703) 683-6774

Deliverables

- Background Briefing
  - History
  - Previous Studies
- Issue Papers
  - NSNF; Intell support; Nuclear weapons development; Force Structure
  - DNA position and interest
- Reports and Analysis of NPWG proceedings

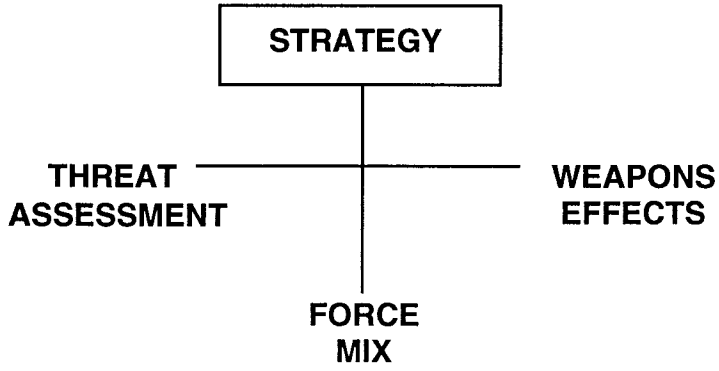
Benefits

- Improve DNA ability to influence high level policy issues

Version 1.0 As of 2/28/92

Chart A-55. Future U.S. strategic planning requirements.

US STRATEGIC PLANNING REQUIREMENTS



Approach

- Study various strategic force mixes of reduced strategic arsenal, and examine effects of different strategic nuclear attacks.
- Evaluate concepts for integrated planning of nuclear and nonnuclear strategic systems, including trade-offs inherent in choosing nonnuclear technologies.
- Assess future alternatives in light of changes in U.S. strategic force posture and implications of Presidential announcement of de-emphasis on nuclear force readiness and emphasis on nuclear safety and reliability.

Objective

- Assess implications of changes and reductions in U.S. strategic force structures, especially the effects of strategic nuclear attacks.
- Evaluate methods for integrating non-nuclear weapons into U.S. plans, and identify nuclear weapons technologies that might be relevant to application of non-nuclear weapons.
- Identify issues and alternatives coupled to DNA technologies.

Customer:	Dr. George Ullrich, DNA (703) 325-7300
SAIC Principal Investigator:	Dr. Marv Atkins (703) 556-7098

Deliverables

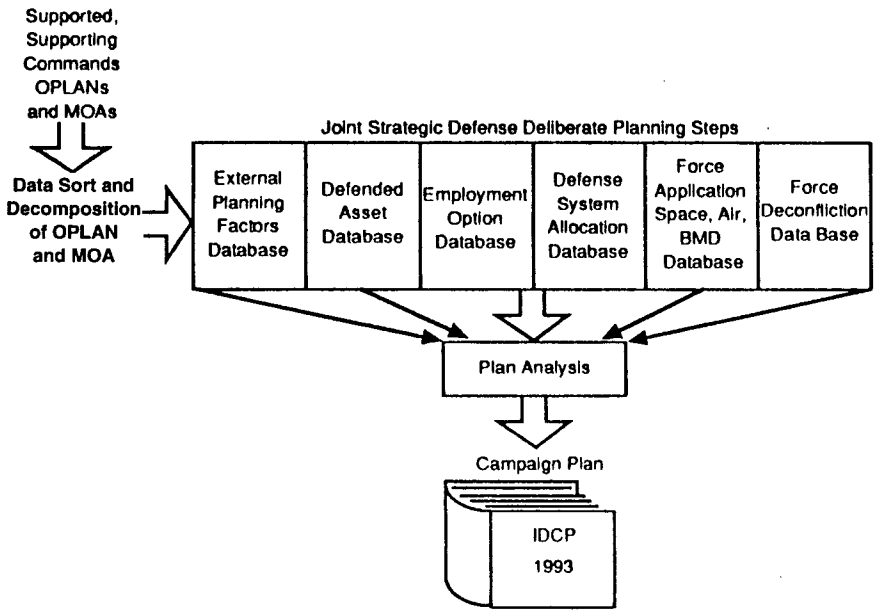
- Interim briefing and report at three months on results of research and analysis on potential force mixes and applicability of nuclear weapons effects to assessing nonnuclear weapons performance.
- Final briefing and report at project conclusion.
- Ad-hoc support to customer as required.

Benefits

- Understanding of longer-term ramifications of President's decision to alter readiness and size of strategic nuclear forces.
- Anticipate near-term issues affecting DNA and prepare DNA to meet instant response demands in areas covered by this subtask.

Version 1.1 As of 10/1/91

Chart A-56. Joint Strategic Defense Operations Planning Support.



Approach

- Collect/review supported, supporting Commands, OPLANs and MOAs.
- Develop decomposition method for referenced OPLANs and MOAs.
- Develop reverse engineering method to be applied to data extracted from OPLANs and MOAs.
- Develop identification method for congruent and noncongruent data from OPLANs and MOAs.
- Develop data base build method to support planning system reverse-engineering.
- Maintain documentation of campaign planning system.
- Assist JOSDEPS in building 1993 Integrated Defense Campaign Plan.

Objective

- Provide support to JOSDEPS in development of 1993 Integrated Defense Campaign plan for North America.
- Validate the Joint Strategic Defense Campaign Planning System. Modify as required.

Customer:	Col Dennis Shepherd, JOSDEPS (719) 554-9688
SAIC Principal Investigator:	Mr. Norman Fennelly (703) 683-6774

Deliverables

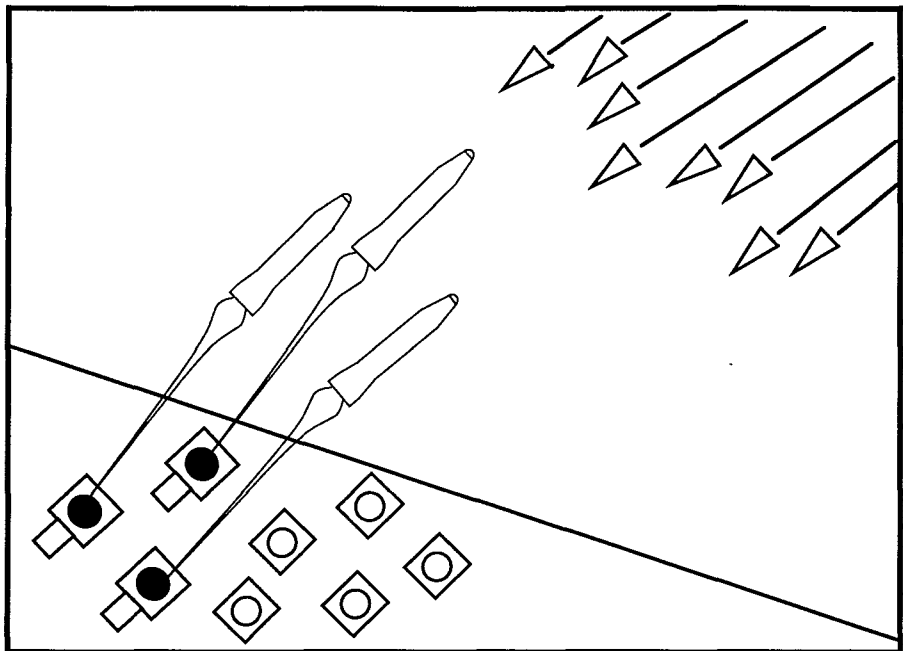
- Update/modify the Integrated Strategic Defense Campaign Planning Systems.
- Develop and document a structured method for OPLAN, CONOPS, and MOAs decomposition into hierarchical data bases to support the planning system.
- Develop and document a method of identifying congruent and noncongruent data to populate the planning system data bases.

Benefits

- Provides advance information on currently planned defense system for review and comment within the offense/defense community

As of 9/24/92

Chart A-57. Alternative force structure assessments.



Objective

To assess the effectiveness of U.S. strategic force structures considering uncertainties in alert rates, weapon characteristics, employment options, and threat characterizations.

Customer:	Mr. Greg Schulte, OSD/ISP/SFP (703) 614-9535 Lt. Col. John Hayes, JSTPS/JKAW (402) 292-0138
SAIC Principal Investigator:	Ms. Gael Tarleton (206) 747-7152

Approach

- Identify time-sensitive MOEs
- Collect required data, make any estimates necessary
- Develop Force Structure Implications Model (FSIM)
- Perform risk analyses using FSIM
- Perform wargaming analyses
- Identify key conclusions and document results

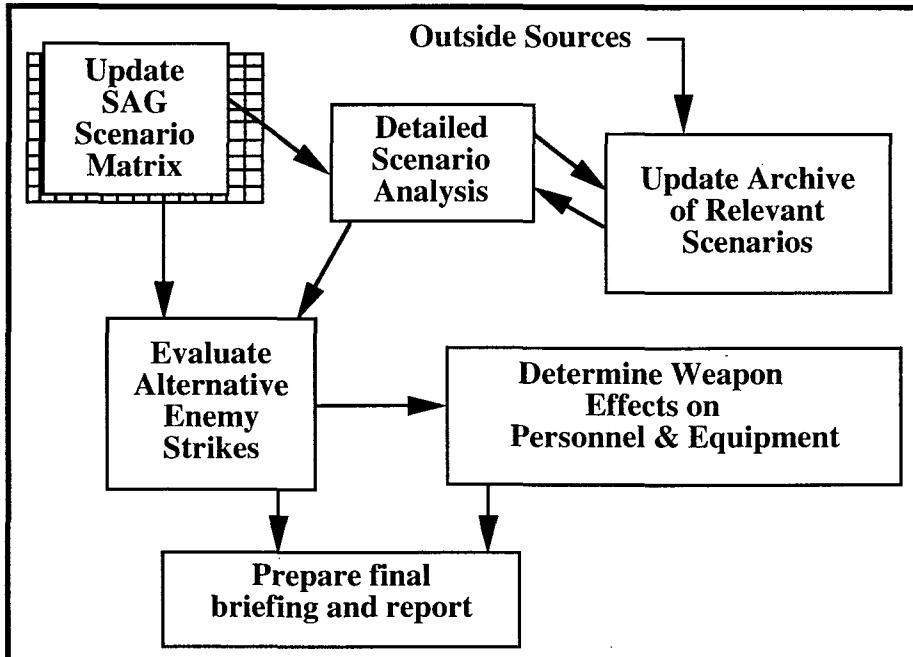
Deliverables

- Subtask reports on Alternative Force Structures, Threat estimates and Force Effectiveness Analyses
- Final Briefing/report on results of force structure analyses

Benefits

- Insights into ramifications of large threat uncertainties
- Identification of alert status and force structure requirements

Chart A-58. Alternative employment options.



Approach

A. Expand SAG Scenario matrix.

B. Conduct detailed scenario analysis to include:
   1. Feasible set of political events per scenario.
   2. Technical/temporal aspects of the WMD threat.
   3. Critical variables impacting US interests and options.
   4. Implications of potential US missions.

C. Identify alternative enemy strikes on US interests (use enemy forces, doctrine, objectives, strike timing).

D. Assess physical effects on selected targets.

Objective

Evaluate the impact of emerging threats of WMD on US military's capability to satisfy operational mission requirements.

Customer:	DNA and STRATCOM POC: Dr. George Ullrich, DNA/DDIR
SAIC Principal Investigator:	Mr. Greg Weaver (619) 546-6710

Deliverables

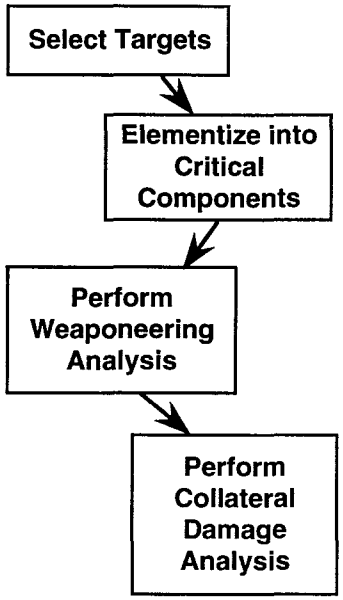
- STRATCOM/SAG Scenario Matrix (Expanded)
- Archive of relevant scenarios.
- Summary of scenario related weapon effects/ damage tables and related military impacts.
- Final briefing and report.

Benefits

- Identification of a representative range of nuclear proliferation-related scenarios requiring a STRATCOM planned response.
- Provides a basis to evaluate alternative operational concepts and to assess needed force improvements.

2/25/93

Chart A-59. Large area target analysis.



Approach

- Select three large-area targets in each of two built-up areas.
- Elementize targets into critical components.
- Perform weaponeering analysis with precision weapons at 1, 2, 5 and 10 kt to determine number of weapons necessary to destroy the targets.
- Perform weaponeering analysis with baseline inventory weapons and compare with results in previous step.
- Perform collateral damage analysis to determine prompt fatalities and casualties.
- Investigate anomalies in previous analysis at 2 and 5 kt and compare on weapon-by-weapon basis.

Objective

Demonstrate the advantage in terms of collateral damage reduction in attacking large area targets with precision low yield nuclear weapons relative to the current inventory.

Customer:	Lt. Col. Pat Larkin, ACC (804) 764-6411
SAIC Principal Investigator:	Ms. Deedee White (619) 546-6918

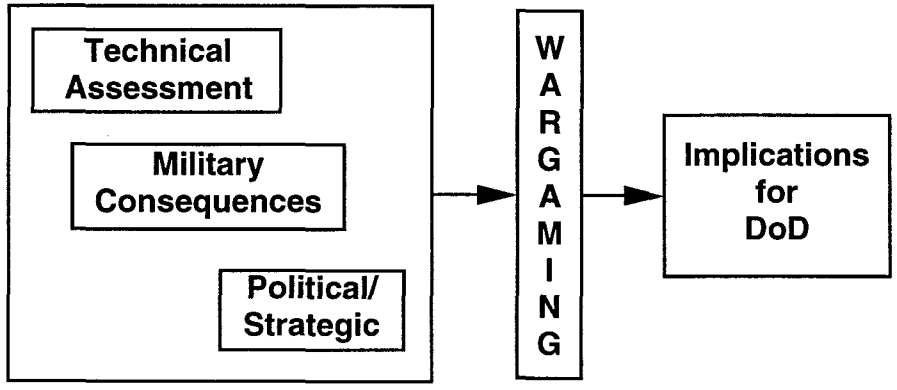
Deliverables

- Briefing to be presented to PLYWD (Precision Low Yield Warhead) Phase I Study which shows target layouts, weapon requirements and collateral damage analysis.
- Final written report submitted to PLYWD Study and DNA.

Benefits

- Better understanding of weapon requirements.
- Reduction in collateral damage with no casualties from fallout.
- Reduction in total yield requirements to meet specified damage levels.

Chart A-60. MTR, WMD & counter proliferation.



Approach

- Technical MTR/WMD Developments
  - By type of Countries
  - Pivotal Technologies (3 decades)
- Military Consequences of MTR/WMD
  - Technology to capability transforms
  - Relationships to other capabilities
  - Limits on contributions of LRSW
- Political-Strategic Consequences
  - On U.S. Security Alliances
  - U.S. influence on LRSW of others
- Scenario Development (Incorporating Steps 1-3)
- Wargaming (Political-Strategic-Military Consequences)
- Implications for DoD on:
  - U.S. Employment Policy for WMD
  - Force Structure Requirements
  - Regional Security Alliances

Objective

Evaluate U.S. Policy/Force Structure implications of the military-technical revolution and proliferation of weapons of mass destruction on the nature of strategic long-range strike warfare (LRSW) over the next three decades.

Customer:	Mr. Andy Marshall, OSD Net Assessment (703) 695-1811
SAIC Principal Investigator:	Dr. J.J. Martin, (619) 546-6297

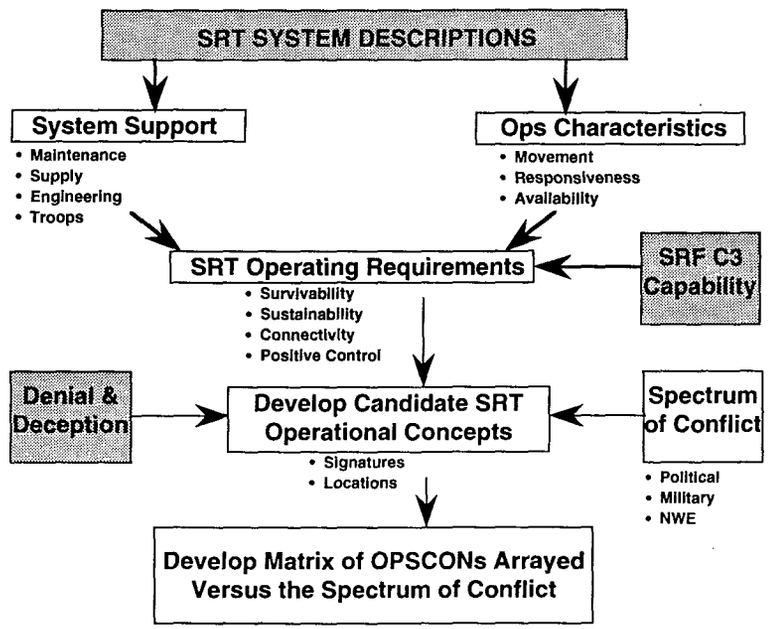
Deliverables

- Periodic progress reports
- Interim Program Review (IPRs)
- Administer Wargames
- Final briefing

Benefits

- Understanding of potential demands on U.S. Force capability.
- Provides analytical basis to support evaluation of counter proliferation scenarios which will focus on WMD and LRSW.

Chart A-61. Planning impacts of changing SRT OPSCONS.



Objective

Determine potential planning impacts as SRTs operationally respond to increased world tensions.

Customer

Capt. Jim Byrom,SAC/INA (402)2 94-2384

SAIC Principal Investigator

Mr. Barney Clark (619) 546-6899

Approach

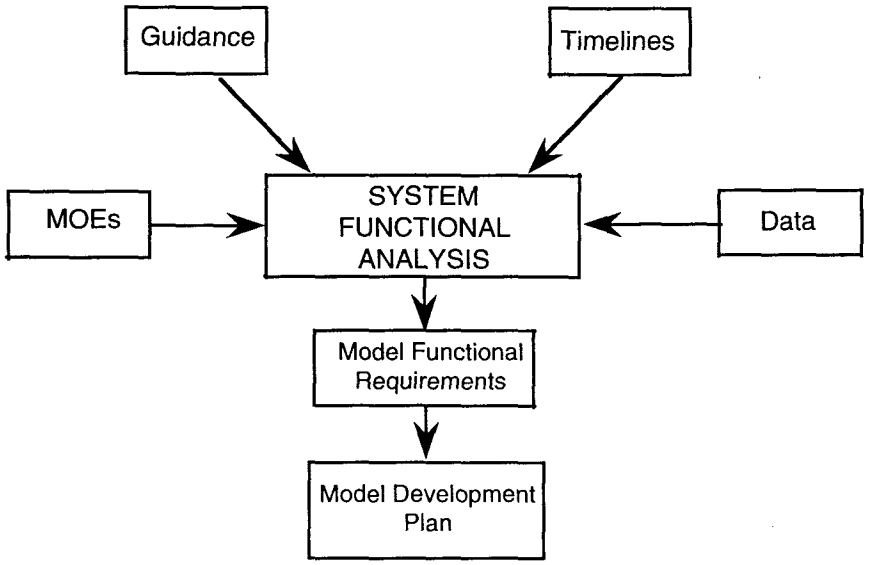
- Determine SRT system descriptions
- Determine SRT operational capability
- Develop possible SRT operations concepts and planned U.S. counter-SRT posture
- Estimate impact of possible/probable SRT OPSCONS on planning under increasing tensions and threat

Deliverables

- Progress briefing on SRT deployment constraints and connectivity
- Progress briefing on possible SRT Operations Concepts (OPSCONS) and counter-SRT planning
- Final briefing, with text, on impacts of changing SRT OPSCONS on planned counter-SRT operations

Version 11.1 As of 10/8/90

Chart A-62. Logistics Infrastructure Analysis System (LIAS).



Approach

- Define/coordinate the LIAS operational scenario
- Describe the economic infrastructure of interest
- Develop LIAS system measures of merit
- Provide LIAS functional description and development plan

Objective

Provide system development plan for a PC-based installation selection aide for the JLTE

Customer:	Lt. Colonel John Ciriaco, JSTPS/JLT, (402) 294-7142
SAIC Principal Investigator:	Mr Barney Clark (619) 546-6899

Deliverables

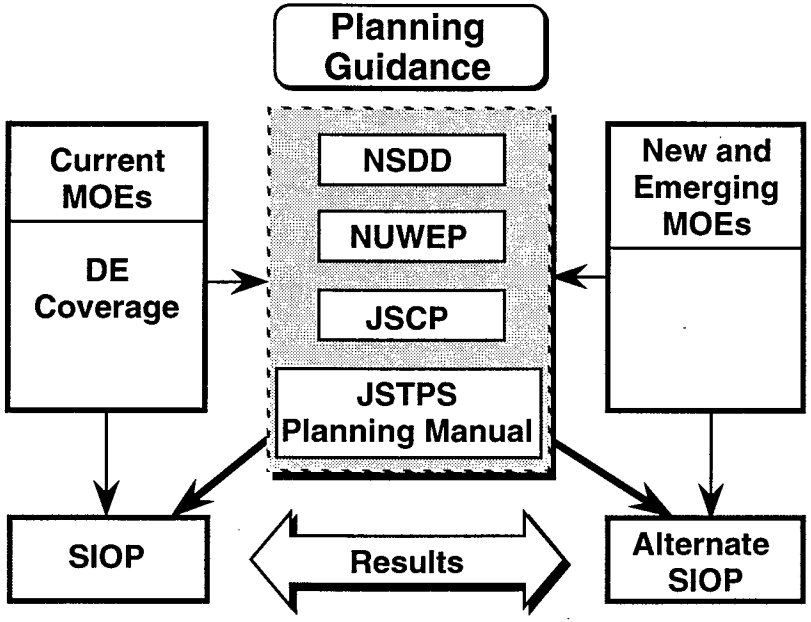
- Provide LIAS Functional Description
- Provide LIAS System Development Plan

Benefits

- Provide the costs, benefits, and development plan for automating portions of the economic installation selection task

As of 3/11/91

Chart A-63. J5/J8 strategic sufficiency.



Objective

Draft a White Paper to identify issues related to new and emerging MOEs and how they may impact the strategic planning process.

Customer

Maj. Raymond T. Bull, DNA (703) 325-1137

SAIC Principal Investigator

Dr. Allen K. Rachel (619) 546-6397

Approach

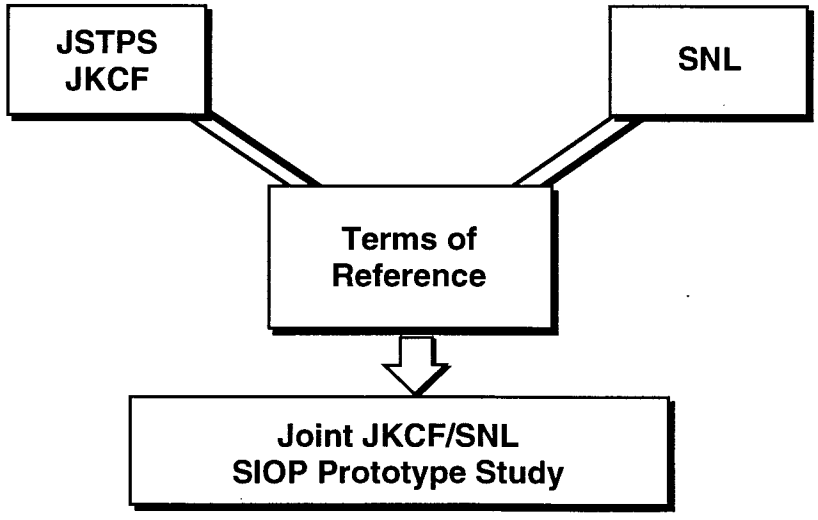
- Review objective/scope with DNA CTM
- Collect related reference material
- Develop drafts and revise
- Incorporate DNA comments on drafts
- Prepare final draft (version 1)

Deliverables

- Draft for DNA internal review
- Draft for DNA external review
- Final draft (version 1)

Version 10.0 As of 5/25/90

Chart A-64. SIOP prototype study (TOR – first outline).



Objective

Provide draft outline for Terms of Reference for use by JSTPS/JK and Sandia National Laboratory to study ways to Streamline SIOP development process.

Customer

Capt. Anne Fletcher, JSTPS/JK (402) 294-7868

SAIC Principal Investigator

Mr. Roger Craver (402) 291-2233

Approach

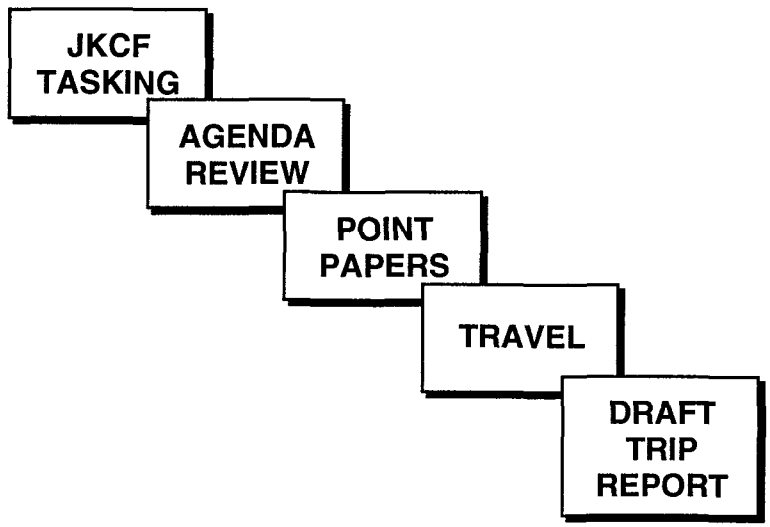
- Review objectives of Joint JSTPS/SNL study effect with JKCF
- Develop draft for comment by JKCF
- Incorporate JKCF Revisions

Deliverables

- Draft TOR outline for JKCF comment
- Revised draft TOR outline

Version 10.0 As of 6/5/90

Chart A-65. SAPE program meeting support.



Objective

Provide SAPE Program Meeting Analytical Support to JSTPS/JKCF.

Customer

Maj. Ron Haekel, JSTPS/JKCF (402) 294-7868

SAIC Principal Investigator

Mr. Ken Bryars (402) 291-2233

Approach

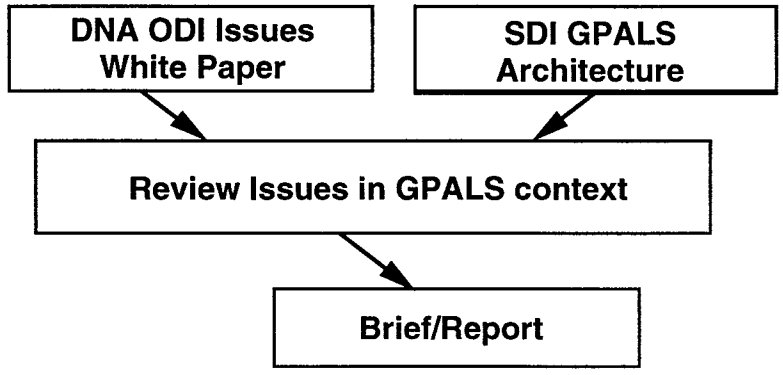
- Review Meeting Prepare Materials as Requested
- Develop Point Papers
- Travel
- Draft Trip Reports

Deliverables

- Document Review/Travel Preparation
- Point Papers
- Draft Trip Reports

Version 10.0 As of 8/29/90

Chart A-66. ODI issues in a GPALS context.



Approach

- Review Issues in GPALS context
- Draft GPALS addendum to Issues White Paper

Objective

Update Issues briefing and descriptive materials for use in upcoming ODIOWG meeting to reflect recent SDI architectural changes from a Phase One architecture to a GPALS architecture.

Customer:	Major Raymond T. Bull, USAF Defense Nuclear Agency
SAIC Principal Investigator:	Mr. Edward J. Ohlert (703) 683-6586

Deliverables

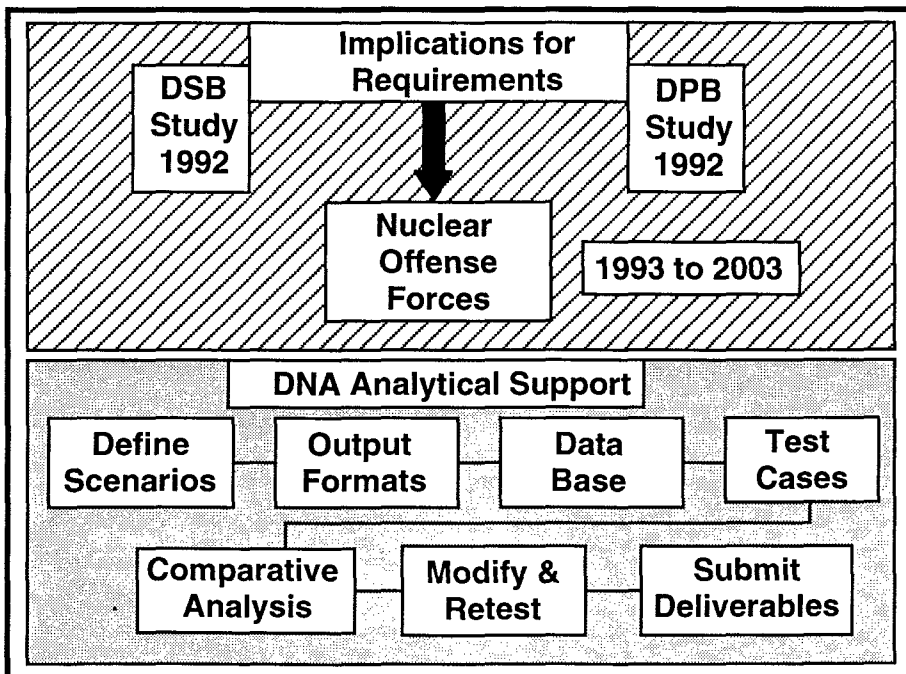
- GPALS Issues Handout for ODIOWG meeting
- Issues Briefing Update

Benefits

- Provides GPALS insight for ODIOWG on ODI issues

Version 1.0 as of 3/12/91

Chart A-67. DNA analytical support.



Approach

- Define postulated scenarios
- Secure customer approval of output formats
- Compile relevant data bases
- Develop test cases a-n.
- Conduct comparative analysis of test cases
- Modify selected scenarios and retest
- Submit deliverables as required

Objective

Evaluate alternative nuclear force structures for 1993 -2003 using DSB and DPB postulated scenarios, with and without GPALS deployment, with/without friendly and enemy TMD and TAD.

Customer:	Maj. James A. Sands, DNA (703) 325-1137
SAIC Principal Investigator:	Dr. Al Rachel (619) 546-6397

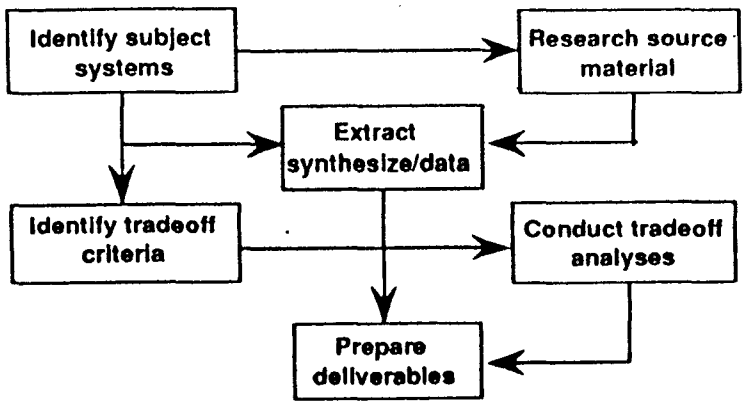
Deliverables

- Progress Reports
- Annotated Briefings
- Point/Talking Papers
- Computer Simulations
- Final Report

Benefits

- Provides an analytical and quantitative basis for force structure recommendations.
- Provides force-effectiveness evaluations against evolving scenarios (individual/collective CIS and emerging NBC states).

Chart A-68. Conventional strategic weapons.



Approach

- Research current objective source material
- Identification of relevant strategic delivery/conventional warhead systems
- Extract and synthesize relevant data
- Identify and select appropriate trade-off categories/criteria.
- Conduct trade-off analysis
- Prepare talking points & briefing

Objective

To analyze the concept and viability of conventional warheads on nuclear systems and define the requirements for these systems.

Customer:	Lt Col Duane Tehee, DNA (703) 325-1140
SAIC Principal Investigator:	Dr. Al Rachel, PI (619) 546-6397 Ms. Brenda Poole, POC (703) 448-6421

Deliverables

- Talking Points
- Draft Briefing

Benefits

- Identification of relevant factors impacting use of conventional weapons delivered by strategic delivery systems on strategic targets.
- Usable and current reference data base to support on-going seminars and discussions.

Version 10.0 As of 5/25/90

Chart A-69. Conventional/Nuclear deterrence.

N/A

Approach

- Develop project outline and submit to DNA for approval.
- Research relevant source materials based on DNA approved outline of briefing.
- Extract and synthesize relevant data
- Compile draft briefing and relevant backup.
- SAIC dry-run before senior review group.
- DNA dry-run for Lt Col Hamlin, Lt Col Sands, and other DNA designated attendees)
- Brief senior DNA managers as requested by DNA.

Objective

To develop an executive level briefing with backup on the topic of conventional versus nuclear deterrence in context of regional aggression.

Customer:	CDR James Hamlin, DNA/NSCD (703) 325-7824
SAIC Principal Investigator:	Dr. Al Rachel, PI (619) 546-6397 Ms. Brenda Poole, POC (703) 448-6421

Deliverables

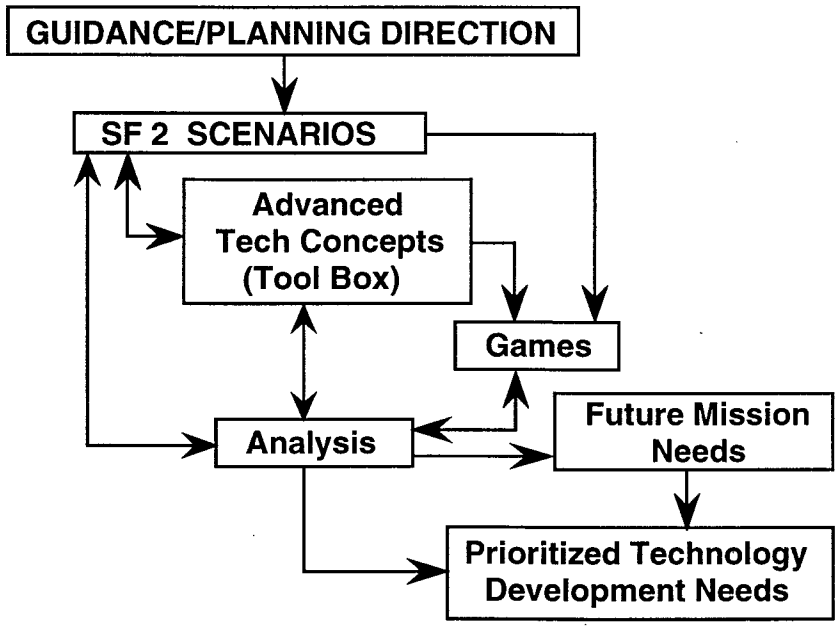
- Executive Level Briefing
- Backup reference materials

Benefits

Provide DNA with source material to support discussion of conventional versus nuclear deterrence of regional aggression.

Version 10.0 As of 5/25/90

Chart A-70. Strategic Futures 2: Phase II



Approach

- Identify recommended scenarios developed by use of the structured analysis presented /amended on 16 March 1994.
- Obtain SAG approval of prioritized list of scenarios.
- Develop detailed scenarios for gaming and the related vignettes and tool box composition.
- Customize game design to stress selected scenarios.
- Pre-test game design and data collection methods against specific scenario/tool box combinations.
- Administer October 94 SAG game.
- Analyze and report results/recommendations.

Objective

Design, develop, and conduct a SAG seminar game to support STRATCOM in correlating future strategic mission requirements with technology acquisition opportunities.

Customer:	Captain (USN) Richard J. Field STRATCOM SAG Secretariat, 402-294-4102
SAIC Principal Investigator:	Dr. Allen K. Rachel, 619 -546 -6397

Deliverables

- Scenario selection methods
- An album of detailed candidate scenarios
- Game design and related materials
- Analysis of game results
- Prioritized list of potential mission needs
- Prioritized technology acquisition requirements

Benefits

- Provides an institutionalized approach to analysis of ever changing threat scenarios and mission capability needs.
- Provides an analytical basis to support user prioritization (user pull) of technology development and related ACTD's.

As of 5/21/94

APPENDIX B
ACRONYMS AND ABBREVIATIONS

ABM	Anti-Ballistic Missile
ACC	Air Combat Command
ACDA	Arms Control Disarmament Agency
ACE	Allied Command, Europe
ACLANT	Allied Command, Atlantic
ACM	Advanced Conventional Munitions
AEM	Arsenal Exchange Model
ALSOM	Air-Launched Stand-Off Missile
AMEM	Army Multiple Engagement Model
AOR	Area of Responsibility
ASIOP	Assessments for Single Integrated Operations Planning
ASW	Anti-Submarine Warfare
ATBM	Anti-Tactical Ballistic Missile
ATR	Air Transport of Radiation
AW	Air Warning; Automatic Weapon
BMD	Ballistic Missile Defense
BMDO	Ballistic Missile Defense Organization
BMEWS	Ballistic Missile Early Warning System
BMO	Ballistic Missile Office
BRV	Ballistic Reentry Vehicle
BSD	Ballistic Systems Division
BSTS	Boost Surveillance and Tracking System
C2	Command and Control
C3I	Command, Control, Communications and Intelligence
C4	Command, Control, Communications and Computers
CADOB	Consolidated Air Defense Order of Battle
CDRL	Contract Delivery Requirement List
CEO	Chief Executive Officer
CEP	Circular Error Probable
CFE	Conventional Forces Europe
CINC	Commander in Chief
CINCPAC	Commander in Chief, Pacific
CINCSTRAT	Commander in Chief, Strategic Command
CPFF	Cost Plus Fixed Fee
CPM	Critical Path Method

CRG	Compliance Review Group
CRTEM	Counter Relocatable Target Effectiveness Model
CSLBM	Conventional Sea-Launched Ballistic Missile
CTB	Comprehensive Test Ban
CTM	Contract Technical Monitor
CT&R	Combined Timing & Resolution
CWC	Chemical Weapons Conference
DARPA	Defense Advanced Research Project Agency
DCA	Dual Capable Aircraft
DCS	Defense Communication System; Deputy Chief of Staff
DE	Damage Expectancy
DGZ	Desired Ground Zero
DIA	Defense Intelligence Agency
DIS	Defense Industrial Security
DISA	Defense Industrial Security Agency
DMA	Defense Mapping Agency
DNA	Defense Nuclear Agency
DOB	Depth of Burst
DoD	Department of Defense
DOE	Department of Energy
DPB	Defense Policy Board
DPRK	Democratic Peoples Republic of Korea
DSB	Defense Science Board
DSTP	Director, Strategic Target Planning
EADSIM	Enhanced Air Defense Simulation
ECM	Electronic Counter-Measures
EDI	Electronic Data Information
EMP	Electromagnetic Pulse
EPW	Earth Penetrating Weapon
ERINT	Extended Range Interceptor
FCO	Force Contingency Options
FSTL	Future Strategic Target List
FSU	Former Soviet Union
GBI	Ground Based Interceptor
GPALS	Global Protection Against Limited Strikes
HEMP	High altitude Electro Magnetic Pulse
HISEMM	High altitude Optical/RF Signal Degradation Model
HML	Hard Mobile Launcher
HOB	Height of Burst
IC	Integration Concept

ICBM	Intercontinental Ballistic Missile
INC	Insertable Nuclear Component
INF	Intermediate Range Nuclear Forces
IPR	In-Progress Review
IR&D	Independent Research and Development
ISP	Integrated Security Plan
ITEM	Integrated Theater Engagement Model
JCS	Joint Chiefs of Staff
JEM	Joint Engagement Model
JIEO	Joint Intelligence Estimate Office
JMEM	Joint Munitions Effectiveness Manual
JOSDEPS	Joint Strategic Defense Planning Staff
JSCP	Joint Strategic Capabilities Plan
JSTPS	Joint Strategic Target Planning Staff
KBS	Knowledge Based System
LAMB	Low Altitude Multiburst Model
LIAS	Logistics Infrastructure Analysis System
LRSW	Long Range Strike Weapon
M3	Multi-aimpoint, Multi-criteria, Multi-weapon code
MBA	Master of Business Administration
MCCCM	Missile Combat Crew Commander
MDA	Multiattribute Decision Analysis
MEM	Multiple Engagement Model
MIA	Master of International Affairs
MMIII	Minuteman III
MOASIS	Mini Operations Analysis Strategic Interaction Simulator
MOE	Measure of Effectiveness
MSC	Major Subordinate Command (NATO)
MSTART	Missile System To Attack Relocatable Targets
MTR	Military Technical Revolution
NATO	North Atlantic Treaty Organization
NBC	Nuclear/Biological/Chemical
NCA	National Command Authority
NDL	National Desired Ground-Zero List
NDU	National Defense University
NIS	Negotiation Information System
NMCC	National Military Command Center
NNPS	NATO Nuclear Planning System
NORAD	North American Air Defense Command
NPR	National Policy Review; National Posture Review

NPT	Non-Proliferation Treaty
NPWG	Nuclear Planning Working Group
NSD	National Security Directive
NSDD	National Security Decision Directive
NSNF	Non-Strategic Nuclear Forces
NSSSG	National Security Studies and Systems Group
NSTL	National Strategic Target List
NTB	National Target Data Base
NTF	National Test Facility
NUWEP	Nuclear Weapons Employment Guidance
NWDG	Nuclear Weapon Development Guidance
NWE	Nuclear Weapon Effects
NWEP	New Force Employment Policy
OASIS	Operational Analyses Strategic Interaction Simulator
OASTD(AE)	Office of the Assistant to the SECDEF, Atomic Energy
O-D	Offense-Defense
ODI	Offense-Defense Integration
ODIOWG	Offense-Defense Integration Opportunities Working Group
OPNA	Operations, Net Assessments (DNA Office)
OSD	Office of the Secretary of Defense
OSD(P)	Office of the Secretary of Defense, Policy
OSIA	On-Site Inspection Agency
OUSD(A)	Office of the Under Secretary of Defense, Acquisition
PD	Probability of Damage
PDCALC	Probability of Damage Calculator
PEM	Optical Nuclear Signal Degredation Model
PI	Principal Investigator
PK	Peacekeeper
PKRG	Peacekeeper Rail Garrison
PLYWD	Precision Low-Yield Warhead
PM	Program Manager
PNET	Peaceful Nuclear Explosions Treaty
POC	Point of Contact
POL/MIL	Political/Military
PSC	Principal Subordinate Command (NATO)
PTP	Probability to Penetrate
QRA	Quick Reaction Analysis
RDT&E	Research, Development, Test and Engineering
RFP	Request for Proposal
RISOP	Red Integrated Strategic Operations Plan

RPM	Rapid Production Model
RV	Reentry Vehicle
SAC	Strategic Air Command
SAC&C	Strategic Arms Control and Compliance
SAG	Scientific Advisory Group
SAIC	Science Application International Corporation
SAM	Surface to Air Missile
SAPE	Survivable Adaptive Planning Experiment
SCC	Standing Consultative Commission
SCI	Sensitive Compartmented Information
SDI	Strategic Defense Initiative
SDIO	Strategic Defense Initiative Office
SDS	Strategic Defense System
SDSL	Strategic Defense Simulation Laboratory
SE	Shielding Effectiveness; Support Equipment
SELM	Simulated Electronic Launch of Minuteman
SETA	Systems Engineering and Technical Assistance
SF2	Strategic Futures 2
SFPS	Strategic Force Planning Support
SHAPE	Supreme Headquarters, Allied Powers Europe
SICBM	Small Intercontinental Ballistic Missile
SIOP	Single Integrated Operations Plan
SLBM	Submarine or Sea-Launched Ballistic Missile
SMW	Strategic Missile Wing
SNDV	Strategic Nuclear Delivery Vehicles
SOF	Special Operations Forces
SOW	Statement of Work
SPACECOM	Space Command
SRT	Strategic Relocatable Target
SSPO	Strategic Systems Program Office
START	Strategic Arms Reduction Treaty
STIFF	Strategic Intelligence Forecast File
STRATCOM	Strategic Command
SWPS	Strategic War Planning System
TAD	Theater Air Defense
TAT	Technology Assessment Team
TDI	Target Data Inventory
THAAD	Theater High-Altitude Air Defense
TLAM/N	Tomahawk Land Attack Missile, Nuclear
TMD	Theater Missile Defense

TOR	Terms of Reference
TTBT	Threshold Test Ban Treaty
USAC&GSC	United States Army Command General Staff College
USASDC	United States Army Strategic Defense Command
USG	United States Government
USPACOM	United States Pacific Command
VN	Vulnerability Number
VNTK	Vulnerability Number for a degree of hardness
WCCS	Wing Command and Control System
WESCOM	Weapon Effects on Satellite Communications
WMD	Weapons of Mass Destruction

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